

PULP & PAPER

SPECIAL

Green Gold in Alaska:
The Ketchikan Story

see page 74

Also: From the South:
Champion's Carolina Mill

see page 66



"SHEER MAGNITUDE" of Ketchikan Mill is exciting and impressive. Looking across Tongass Narrows to Gravina Island. For identification of buildings see page 79.

OCTOBER 1954



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INCREASED WET-STRENGTH EFFICIENCY is credited to Sodium Phospho Aluminate when used in conjunction with PAREZ® Resin 607. One mill experience in the Great Lakes area shows that wet strength is increased as much as 10% when 0.2-0.4% of SPA is added to the beater.

UNUSUALLY GOOD SIZING RESULTS are reported by a Pennsylvania mill using CYFOR® Dry Dark fortified size. After switching to CYFOR, this mill obtained a 17% reduction in water absorption as measured by the Cobb test.

CONSIDERABLE SAVING IN A LARGE-SCALE COATING operation is credited to the replacement of stearate by ALWAX® Size 204-A. The Wisconsin mill noted that the increase in viscosity was less pronounced than with stearate, and that the smoothness of the coated paper was just as good as that obtained by using 6% stearate. These results were secured at considerably less expense.

IMPROVED PICK TEST ON OFFSET PAPERS was achieved by the use of 0.25% of PAREZ Resin 607 added at the sand trap. This was made standard procedure at this midwest mill, which also reports no broke reclamation problem due to the small amount of resin involved.

*Trade-mark



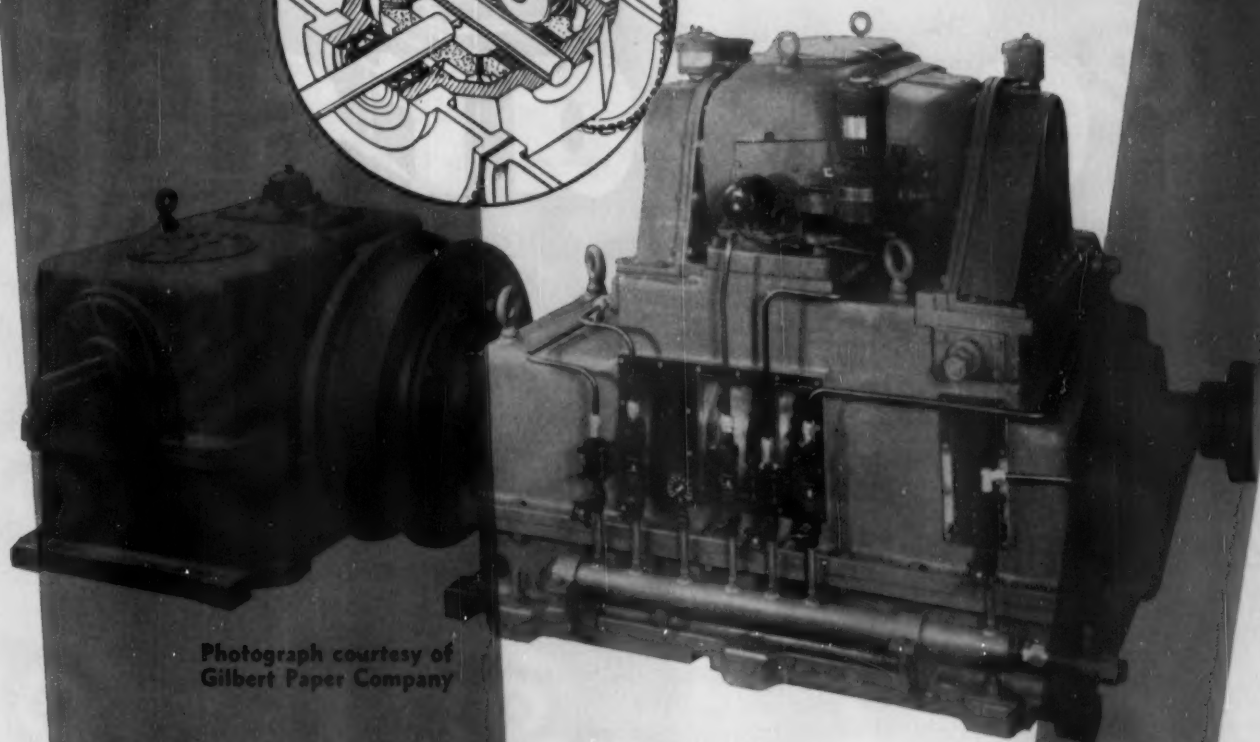
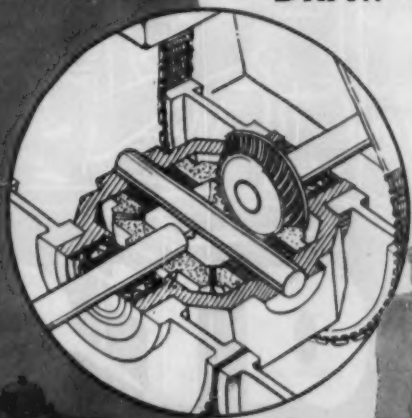
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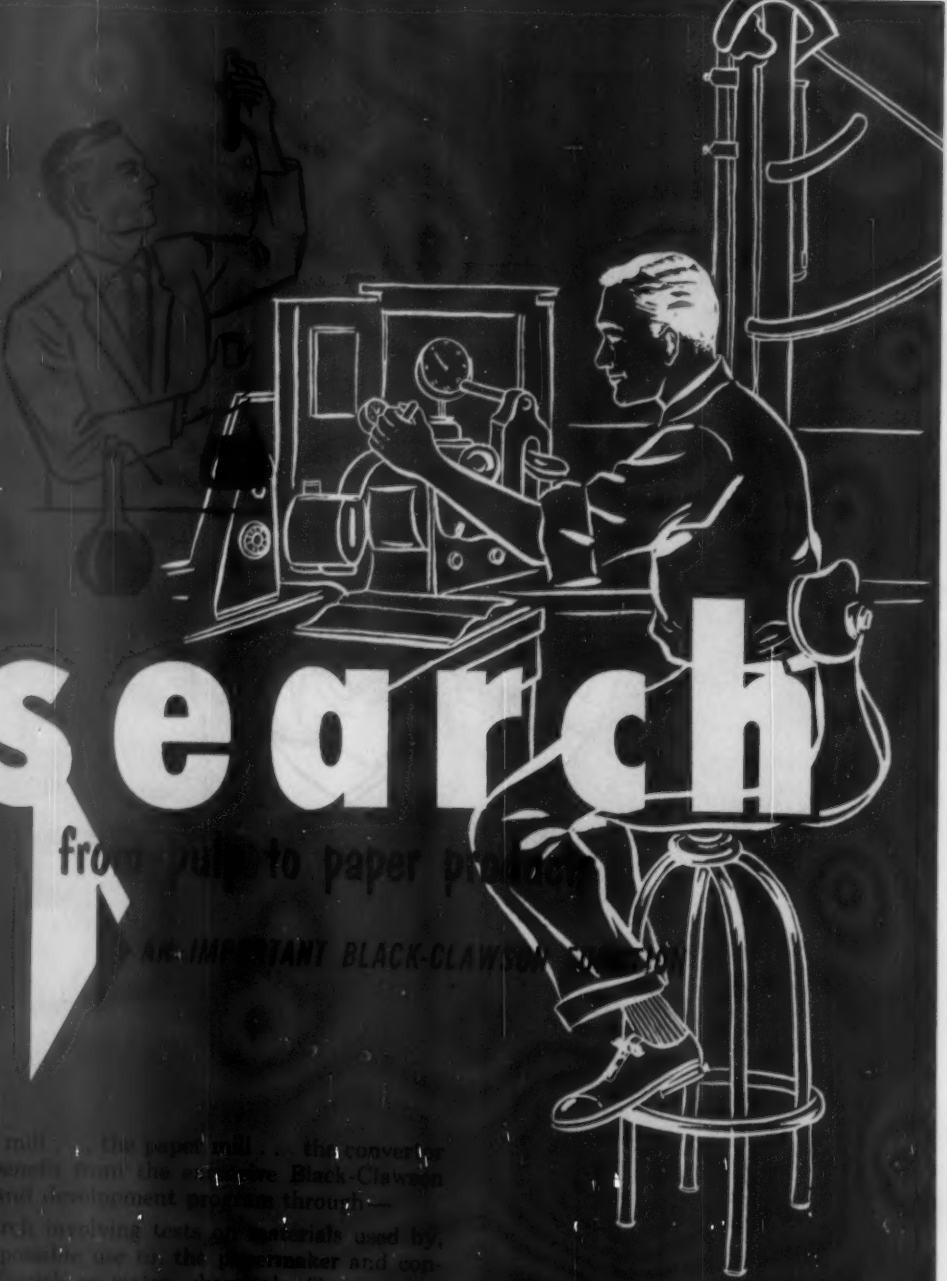
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actively engaged in it.

THE BLACK-CLAWSON COMPANY

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PULP & PAPER

Production and Management
Magazine of the Industry

October, 1954
Vol. 28—No. 11

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PULP & PAPER — October 1954

COMMENT

This Magazine's First Issue Was
Devoted to Alaska—27 Years Later
A Promise Is Fulfilled.

The very first issue of this magazine—Vol. 1, No. 1, Feb. 1927—carried three articles and several pages of information detailing Alaska's potentials as a pulp and paper center. And that issue also printed a promise. It is now fulfilled.

That first issue, 27 years ago, carried pages of valuable information on Alaska and the first published details of its pulp and paper resources. The Forest Service had just offered two tracts of timber for pulp and paper mills. International Paper, and Zellerbach, William Randolph Hearst and others made preliminary applications for power sites. Even a British syndicate, the Whitworth interests, sent a survey group north.

"The Territory of Alaska has one of the greatest potential pulp and paper resources in the world," said that first issue of PULP & PAPER. It noted the forest resources, then estimated at over 15 million cords.

We made a promise in that first issue—"in future issues to publish authoritative information about this development in Alaska."

Our very last deed in carrying out that promise was a recent editorial expedition by PULP & PAPER to Alaska. An entire week was spent at the new mill. A flight was made with a bush pilot into the scene of its first woods camp—operating in virgin timber on primitive Prince of Wales Island.

The complete story and pictures from PULP & PAPER's Alaska expedition appear in this issue. The promise made 27 years ago is fulfilled.

It seems altogether fitting that this issue—360 issues later—carries the authoritative article on Alaska's first pulp industry, the most complete illustrated reference work on one of the finest woodpulp mills ever built anywhere in the world.

Where This Industry Will Cut Future Costs

"Introduction of more modern mechanized logging equipment, which has largely dispensed with the need for maintaining actual logging camps throughout most of the Northeast, Lake States and Minnesota, has resulted in greater productivity per woods worker, as well as greater year-around woods operations."—W. LeRoy Neubrech, pulp and paper specialist, U. S. Department of Commerce.

Here is testimony to what benefits have accrued to the Midwest and Northeast as a result of mechanization in the woods.

How this has been accomplished—the kinds of mechanized equipment favored and proved successful—this has been reported in many articles in PULP & PAPER, in its PULPWOOD SECTION, a distinctive feature of every issue of this magazine.

We have learned, with satisfaction, that many top management men in this industry—as well as their wood producers—turn every issue to our PULPWOOD SECTION. It is management's basic responsibility to see that the mills of their company have sufficient wood, for as long in the future as possible, and at lowest possible cost.

Top management men explain their interest thus: "We are personally interested in woods equipment and methods. We have reached a point where much more can be done now to cut costs in the woods, than in the mills."



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most powerful tractor of its type!

Two husky overhead valve Super 55 engines to choose from! Pick the fuel that fits your needs the best, cuts your costs the most.

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MIDWEST NEWS

Schlafge Now Gen. Mgr.; Alton Names Zeitlin

WILLIAM H. SCHLAFGE, former paper production mgr., is now general mgr. of all International Falls operations of Minnesota & Ontario Paper Co., according to **CLARENCE LARSON**, production vice pres. **FRED E. BOECKH**, former Insulite Div. mgr., is asst. general mgr. Mr. Schlafge, a Minnesota graduate in chem. eng. 1927, has been with M & O 24 years.

BILL McNAIR MOVES

WM. M. McNAIR, heads St. Regis Pulp Sales from new offices—1720 Section Road, Cincinnati. Will sell bleached kraft pulp from Tacoma mill and new Alberta mill.



PAUL A. BARTHOLOMEW, Paper Div. technical director, now is technical director for both Paper and Insulite Divisions. He came to M & O from Hawthorne Paper Co., Kalamazoo.

FRANK ZEITLIN, for the past 24 years with West Va. P & P and recently staff assistant to the exec. vice pres., is new production mgr. of Alton Box Board Co., according to **MARVIN SWAIM**, first vice pres. Mr. Zeitlin succeeds **J. E. BECKER**, resigned.

DR. HARRY F. LEWIS, dean of the Institute of Paper Chemistry, has been elected chairman of the chemical education division of American Chemical Society.

RAY BARTON, gen. supt., Michigan Paper Division of W. C. Hamilton & Sons, Plainwell, Mich., and Mrs. B. someday plan another trip to Portland, Ore., where their daughter lives now with broker husband. They went there when Ray was national president of Supts.

HAROLD DEWEY, scheduling, Lee Paper Co., Vicksburgh, Mich., recently lost a brother, Wilbur, who died at a daughter's home in Dowagiac.

A. WILLIAM REIDEL, Kalamazoo, recently underwent surgery at Mayo Clinic and is recovering nicely.

KENNETH H. SNYDER, industrial and community relations mgr. at Hamilton, O., for Champion, and **ABRAHAM M. VANDERBERG**, veteran mill superintendent, of Kalamazoo, died recently.

EDWARD J. KIRSTEIN is new general manager and **WILLIAM D. JACKSON** is assistant manager of Container Corp.'s container plant at Ogden St., Chicago.

SOUTHERN NEWS

Champion Man Tours Europe; Crowder is Rome Gen. Supt.

JETER MARTIN, finishing supt., Champion Paper, Canton, N.C., recently toured Scandinavia, France and Britain. As president of Canton employees' credit union, he went to an international meeting in Europe of credit union execs.

JIM WITT, coating machines supt. at Champion's Pasadena, Tex., mill is new worshipful master of the Masonic Lodge there.

KIRK SANDERS has succeeded **JOHN SANDERS** (no relation) as Spencer Chemical Co.'s Southeast sales mgr. in Atlanta.

JOINS CHEMIPULP

DAVID M. SHAPLEIGH has joined Chemipulp Process, as sales engineer, primarily responsible for Midwest accounts. He has been with Brown Co., Hercules Powder Co., Paper & Industrial Appliances, and Jackson & Church Co.



RALPH GRANT, ex-kraft foreman, Weyerhaeuser, Longview, Wash., is new asst. pulp mill supt. for East Texas Pulp & Paper, Evadale, Tex.

J. BRUCE MORFORD has been called to Champion's headquarters in Ohio to make special economic studies and **JOHN M. BARNES** has taken over as acting industrial and community relations mgr. at Canton.

GOES TO GARDNER

BRUCE MARTIN, new Manuf. Vice Pres. for Gardner Board & Carton Co. Born in Texas, an LSU grad, he has held high posts with Gaylord, Union Bag and American Box Board.



WALTER J. HULSEY is new district mgr. for Jeffrey Mfg. Conveyor Div., Birmingham, Ala., with **J. THOMAS BERG** as new sales engineer there. **ROBT. M. DUNN** is new sales engineer in Knoxville, Tenn.

LAWRENCE C. CROWDER is gen. supt. of the new Rome (Ga.) Kraft Co. mill starting up soon. He was plant engineer at Macon, Ga.

RALPH SCHMEIDER, also from Macon, is Rome purchasing agent. **ROBT. J. KELLY**, a Mead man, is new industrial relations mgr.

ANTHONY J. PARRINO has been named paper supt., **JAMES A. WHELAN**, pulp supt.; **ALBERT D. SIMPSON**, power supt.; **GEO. W. REYNOLDS**, plant engineer; **JOHN S. KIRKLAND**, chief electrician; **N. R. HARDING**, woodlands mgr., and **E. V. McSWINEY**, assistant controller. All moved to Rome from Macon.

P. W. CHESTNOLVICK has been transferred to the Mobile (Ala.) office of International Paper Co. as forest engineer. Previously he was district forester at Panama City, Fla.

FRED F. SNELL has been named district forester for International Paper Co. at Panama City, Fla.

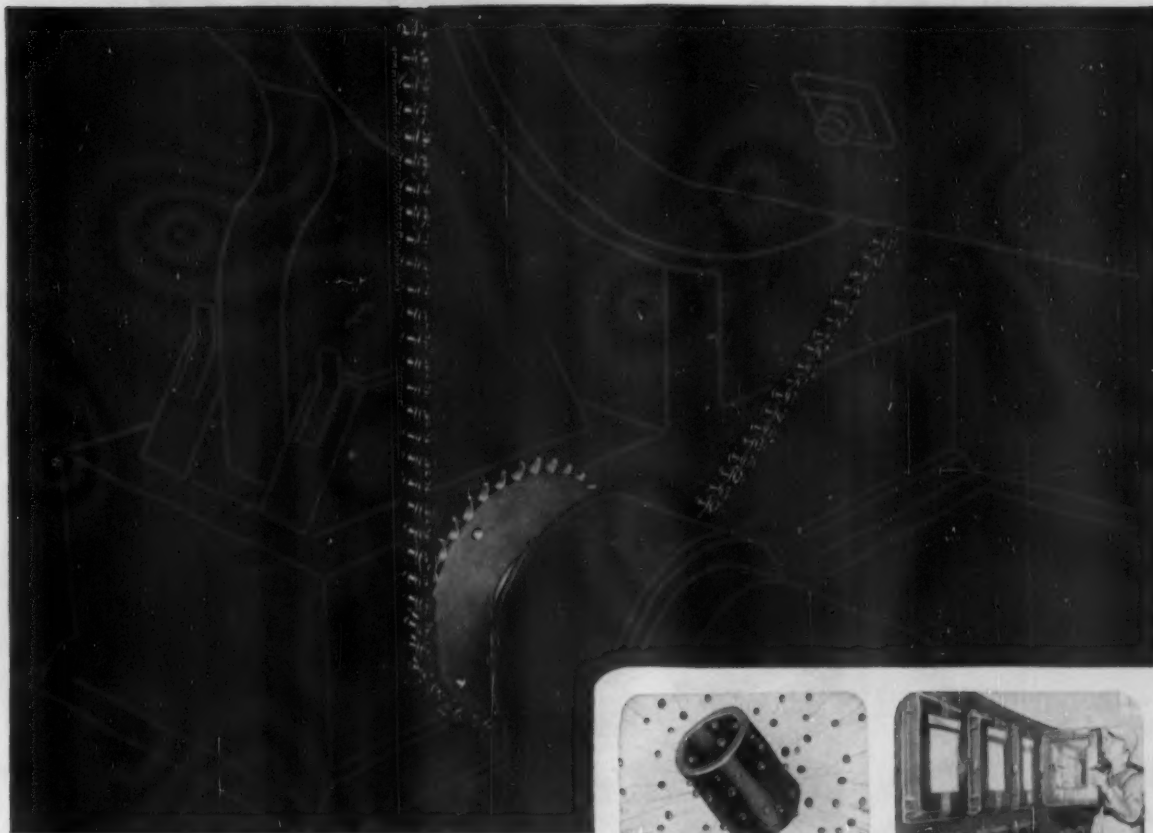
JOE G. BURNS was promoted to pulpwood field service man by Hollingsworth & Whitney Co., Mobile, La. His post as conservation forester was filled by Charles D. Johnson.

LEO WESTMORELAND, Tupelo, Miss., has become a partner of Robert Cochran, Newton, Miss., in the pulpwood dealership business. He was formerly with Gaylord Container Corp.

JOHN C. CAMP, of Jasper, Fla., has been elected president of the newly formed Florida Pulpwood Dealers Assn. Other officers include: **W. L. Bounds**, Ocala, vice president; **Ralph R. Clayton**, Deland, executive secretary; and **J. F. McCallum**, Deland, treasurer.

Continued on page 10

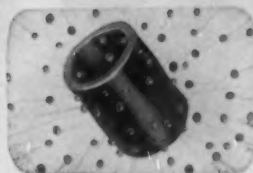
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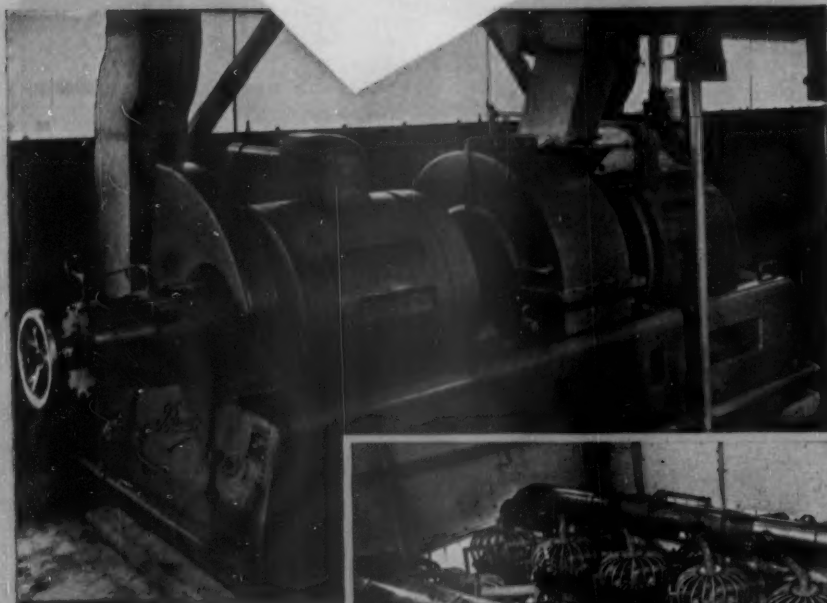
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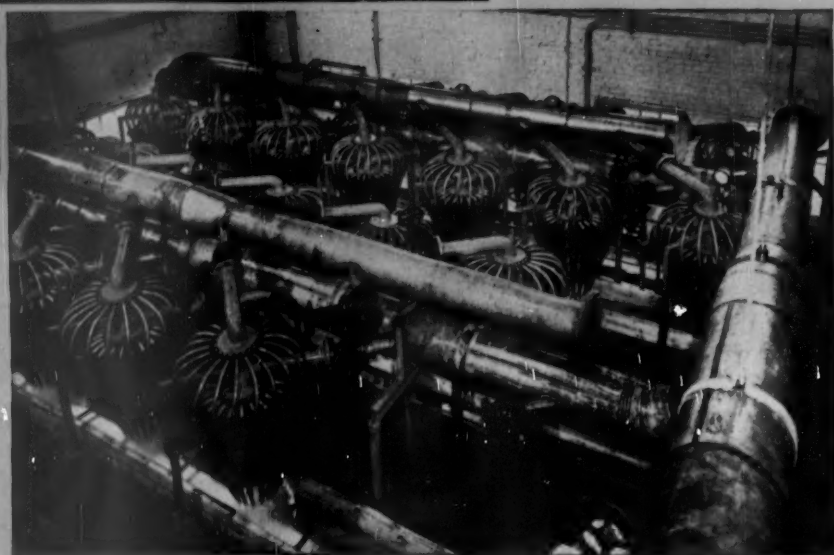
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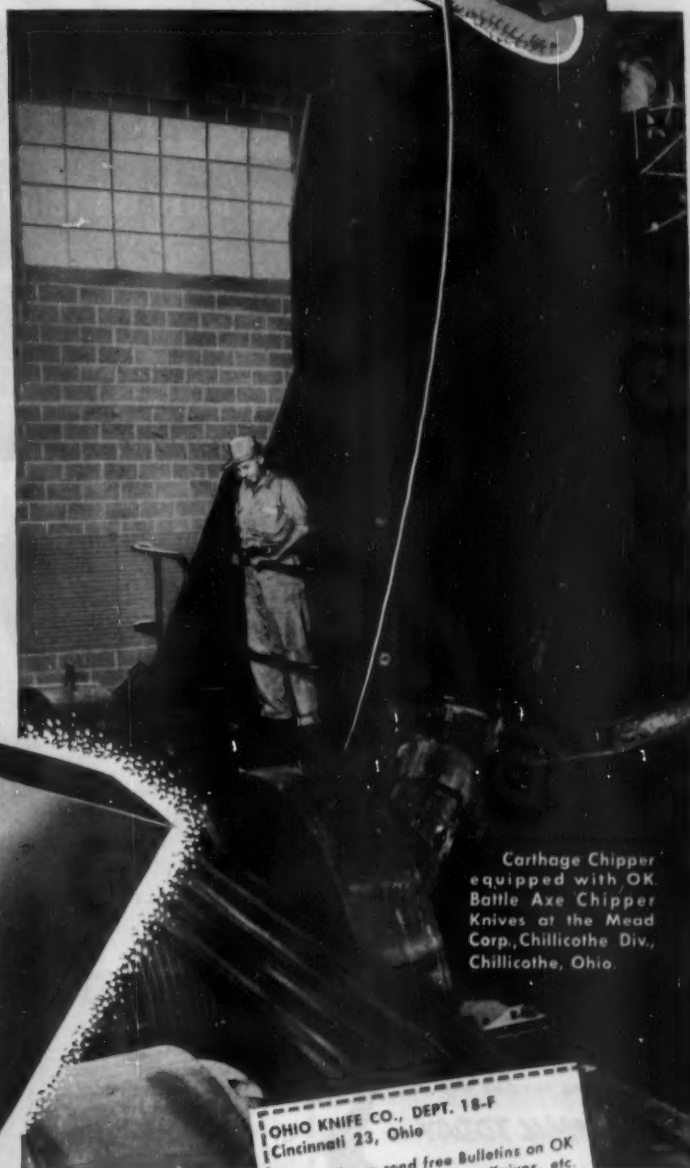
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SOUTHERN NOTES

DR. J. N. SWARTZ has been named technical services superintendent of Bowaters Southern Paper Corp., Calhoun, Tenn. He was with Howard Smith Mills of Canada. S. RICHARDSON has been named assistant technical service superintendent at Bowaters Southern. He was with Great Lakes Paper F. P. MODEN, formerly with Anglo-Can-

adian Mills, also has joined Bowaters Southern.

DONALD TUFTS has been named assistant division manager of the Forestry Division, Crossett Co., Crossett, Ark.

E. T. HAWES, formerly vice president and chief forester for West Lumber Co., Atlanta, Ga., has opened a forest consultant office in Valdosta, Ga.



THESE MEN ASSUME NEW IMPORTANT INDUSTRY POSTS

GEORGE W. CHARTERS (left), retiring after 25½ years with Crown Z--all of it at Camas, Wash., where he was Asst. Res. Mgr. for engineering and maintenance all of that time—is going to "pinch hit" for next few months for his former Camas associate, ALBERT G. NATWICK, Res. Mgr. of East Texas Pulp & Paper Co., Evadale, Tex. Mr. Natwick is recovering from an operation. East Texas will start up about Nov. 1. Mr. Charters had supervision of kraft mill and wood plant reconstruction at Camas for 12 years. H. W. GOCHNAUER (right), Chief Engineer for many years for Northern Paper Mills, Green Bay, Wis., is now the new Chief Engineer for all Marathon Corp. mills. He became part of the Marathon organization over year ago when it acquired Northern.

MITCHELL J. STANKIEWICZ has joined Brunswick Pulp & Paper Co., Brunswick, Ga., as logging engineer.

New faces at Rayonier's Jesup, Ga. mill are CARSON L. CHRISTIAN, machine room superintendent, C. C. RIPPBERGER and W. A. ROBINSON as shift superintendents. All three promotees came from company's Fernandina Beach mill.

W. C. HAMMERLE, forester 10 years of the Southern Pine Association, has joined the Forest Farmers Association Cooperative in Atlanta, and was succeeded in SPA by VIRGIL COTHREN.



ST. REGIS MOVES

JOHN K. FERGUSON (left) is new Asst. to Exec. Vice Pres. E. R. Gay for St. Regis in New York City and JOHN A. McDERMOTT (right), veteran Supt. of St. Regis mills at Herrings, N. Y., Oswego, N. Y., Tacoma and Jacksonville, is new mill Manager at Jacksonville.

Continued on page 14

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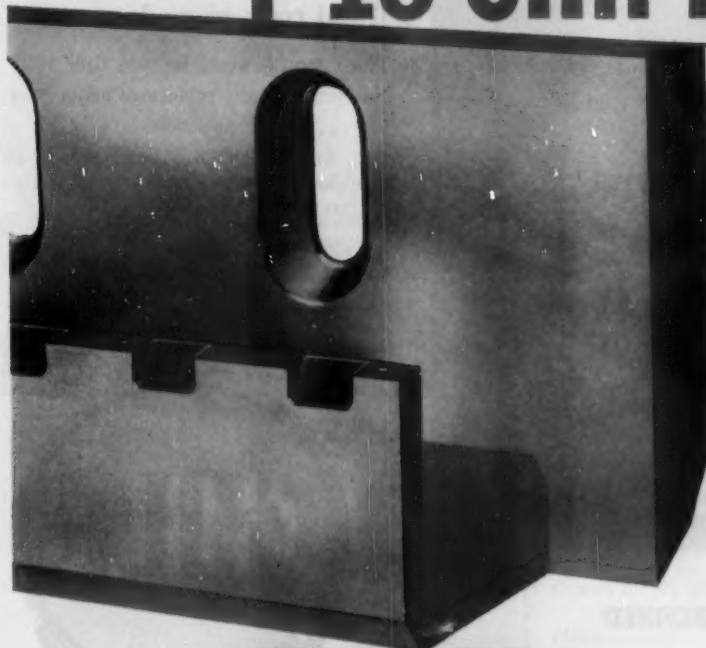
A BRUTE

... But not a
Bruiser



SIMONDS

T-18 CHIPPER KNIFE



A Simonds Chipper Knife cuts more usable chips — less slivers and dust. Cuts 'em clean and uniform without bruising or mashing which means less waste and more pulp from the cook.

Made of extra tough T-18 Steel, developed and poured in Simonds own Steel Mill, these rugged, shock and abrasion resistant knives are built to take the high speed, brutal beating of chipper operation . . . to hold a keen cutting edge longer.

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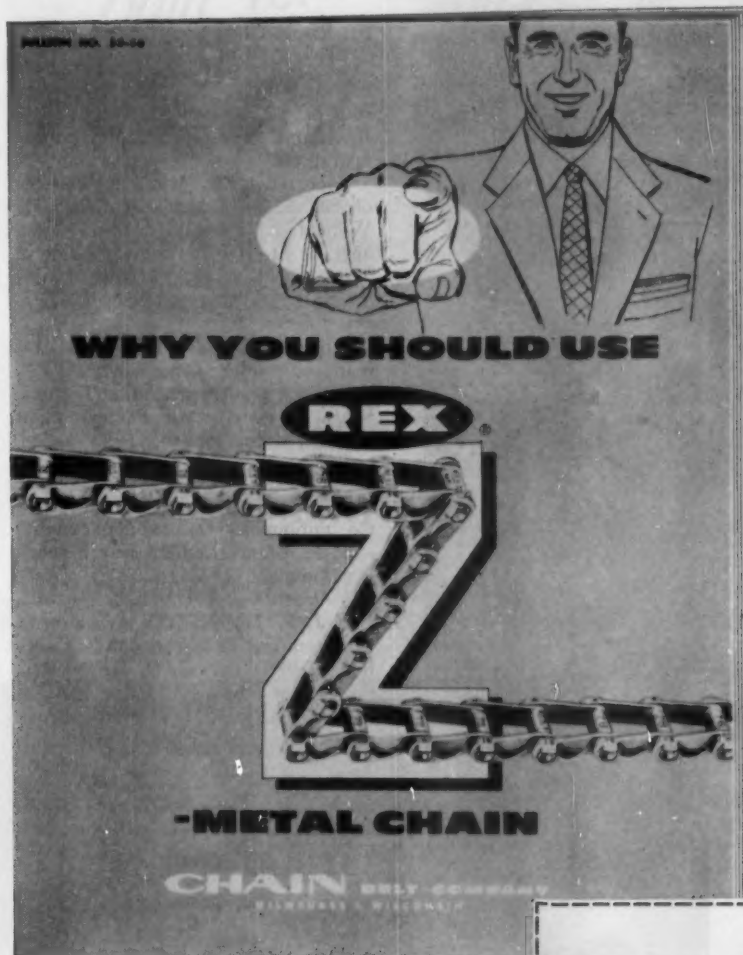
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THE HIGH-EFFICIENCY GASOLINE



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...Longer Life with Rex Z-Metal
Drive and Conveyor Chains**



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Why not send for your copy today...see how you can get far better service *at a saving*. Just mail the coupon.

CHAIN BELT COMPANY

4691 W. Greenfield Ave., Milwaukee 1, Wis.

Please send my copy of Bulletin No. 53-56 containing the facts on the superiority of Rex Z-Metal Chains for my service.

Name.....

Company.....

Address.....

City.....Zone.....State.....

District Sales Offices and Distributors in all principal cities.

NORTHEAST NEWS

Paterson Executive Dies

RICHARD T. ANDERSON, vice president of Paterson Parchment Paper Co., Bristol, Pa., died Aug. 9 at age of 75. He had been general manager, plant engineer and secretary since 1919.

BENJAMIN F. SEEBER, paper mill superintendent of Oswego Falls Corp., Fulton, N.Y., died Aug. 10.

CARLO VICARIO, formerly of Clark & Vicario, and lately with a contracting firm in San Francisco, was fatally hurt in a fall from a building there.

EARL D. RHODES is a new vice president at F. C. Huyck & Sons, Rensselaer, N.Y. Mr. Rhodes has been with Huyck since 1924. In another Huyck appointment, **WILHELM MOE**, was named general superintendent of the Kenwood Mills plant at Rensselaer.

LEONARD A. PIERCE JR.—called to N. Y. City to join Staff of Vice Pres. W. R. Adams, St. Regis Manuf. Vice Pres.



St. Regis Changes

Leonard A. Pierce, Jr., has been called to New York City to join the staff of St. Regis Vice Pres. William R. Adams, for overall manufacturing operations.

Succeeding Mr. Pierce as Manager of St. Regis Kalamazoo division is William E. Caldwell, Jr., former manager of St. Regis' Panelyte plant at Trenton, N.J. Joseph H. Torras is new assistant resident manager at Kalamazoo.

James E. Kussman is new assistant manager under Jack Lamb at St. Regis' pulp and paper mill at Tacoma, Wash. He managed the Panelyte plant at Kalamazoo.

K. H. KLIPSTEIN, general manager, research div., American Cyanamid Co., announces two new departments—basic research and research service depts. **D. J. SALLEY** is assistant director of basic research with **DR. J. T. THURSTON**, director of the Stamford Research Labs, as acting director. **DR. R. H. KIENLE** is director of research service and **DR. R. P. CHAPMAN** is assistant director.

DONALD A. COMES has been elected vice president, Farrel-Birmingham Co., Inc. and will continue to hold his present position of general sales manager.

CLIFFORD S. REPPE has been appointed assistant district sales manager, Hercules Paper Makers Chemical Dept., Holyoke, Mass.

ROBERT J. CARROLL has been appointed assistant treasurer, International Paper Co., succeeding **P. J. SULLIVAN**, who recently died.

ROBERTSON F. ALFORD has been named vice president and sales manager of the paperboard division of the Continental Paper Company, Ridgely Park, N.J. A graduate of Yale and Yale Law School, Mr. Alford has been secretary and assistant treasurer of Continental Paper.

Continued on page 13

around the clock

CHEMI-PULPER

continuous digester

More and more mills turn to CHEMI-PULPER Continuous Digesters for their around the clock operation report the continuous production of uniform, high grade pulps at the lowest possible cost.

Over 90 CHEMI-PULPER Continuous Digesters, built in multiples ranging from 2 to 8 tubes with various diameters, are operating in the United States and foreign countries, producing many grades of pulps from a wide variety of raw materials.

Wood chips or other cellulosic materials are fed to the CHEMI-PULPER tubes by a PANDIA Screw Feeder, moved through the tubes by conveyor screws, and cooked under pressure. Cooking liquor can also be introduced and circulated for those processes where it is required. A PANDIA Discharger then discharges the material continuously and uniformly to the atmosphere. Within this apparatus, the cooking process itself is most flexible. Production rate, cooking time, pressure, etc. can all be altered in a matter of a few minutes with the result that within half an hour an entirely different type of product can be obtained.

The CHEMI-PULPER Continuous Digester is the ideal equipment not only for cooking wood chips, but also for pretreatment processes, cooking of cotton linters, corn cobs, flax, bagasse, etc. The CHEMI-PULPER Continuous Digester has, in fact, proved itself adaptable to almost any pressure cooking process.

One of PANDIA'S engineers will be glad to consult with you concerning your continuous processing requirements.

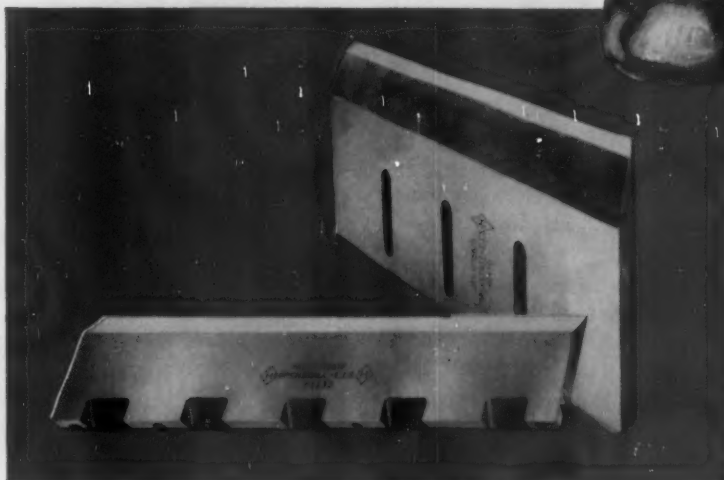
Write for Bulletin C3.

Manufactured and Sold in Canada by
THE ALEXANDER FLECK LIMITED, OTTAWA, CANADA.

PANDIA **PANDIA INC.**
122 EAST 42nd STREET • NEW YORK 17, N. Y.

*built for
rugged
action*

Heppenstall
CHIPPER KNIVES
durable blades for industry



Many leading pulp mills make Heppenstall their standard specification for chipper knives. Heppenstall's record for durability provides such production advantages as:

- MORE CUTS BETWEEN GRINDS
- LESS OVERSIZE CHIPS
- LESS DOWN TIME
- LOWER OVERALL BLADE COST

The reasons may be found in Heppenstall's high standards for the development and manufacture of chipper knives. Made from high quality, electric induction steels, these long-lasting knives are famous throughout the pulp producing industry.

Make Heppenstall *your* standard specifications.



Heppenstall

The most dependable name in forgings
PITTSBURGH 1, PENNSYLVANIA

Sales offices in principal cities

first cousin to magic



Equip that old dryer with the correct Fulton Drainage system and you'll be as quick as others to call the benefits magic.

Increase drying capacity 10% to 30% ... Dry the sheet uniformly clear across ... Hold moisture content more even ... Eliminate excessive shrinkage, cockling, curling, wet streaks ... Reduce breaks and broke losses ... Cut steam costs at least 10%.

Since any one of two of these benefits alone justify the installation of Fulton Systems, is it any wonder that all recently built machines have Fulton Systems?

Is it any wonder that operators of old machines or small machines now "see the light" and are installing Fulton Systems as fast as we can engineer them?

Cost—less than you think ... Get the facts now and decide now.

ROSS MIDWEST-FULTON CORP.
918 WOODLEY AVENUE • DAYTON, OHIO

WOOD PULP PAPER



BULKLEY, DUNTON & CO., INC.
BULKLEY, DUNTON PULP CO., INC.
BULKLEY, DUNTON PAPER CO., S. A.
BULKLEY, DUNTON CELLULOSE EXPORTS, INC.
BULKLEY, DUNTON PAPER (FAR EAST) CO., INC.
BULKLEY, DUNTON PROCESSES, INC.

In New England—
CARTER, RICE & CO. CORPORATION
and STORRS & BEMENT COMPANY

BULKLEY, DUNTON
ORGANIZATION

295 MADISON AVENUE, NEW YORK 17, N. Y.



Offices and representatives in 60 cities

in the United States, Europe, Latin America, Africa, and Asia

NORTHEAST NOTES

GRANT D. MUSCHLITZ has been appointed plant engineer of Paterson Parchment Paper Co. Mr. Muschlitz received his engineering degree from Pennsylvania State College and before coming with Paterson was connected with several concerns in engineering. Starting with Paterson in 1950, he aided in

many of its major engineering problems. Paterson is now finishing the conversion from coal to oil of its four large boilers producing steam for the turbines in the power house as well as steam for processing.

H. BIGELOW MOORE has been appointed sales application engineer for Reliance Electric & Engineering's Philadelphia office.

COAST MAN IN MIDWEST

ROBERT E. SIMKINS, from Seattle, Wash., is new Chief Engineer for Nekoosa-Edwards Paper Co. Graduate of U. of Mich., he was former Chief at Nanaimo, B. C., pulp mill.



RAY P. DUSTRUDE has been promoted to assistant sales manager, and **L. M. WOODSIDE**, chief engineer of the technical field service, in two appointments recently announced by Albany Felt Co., Albany, N.Y. Mr. Dustrude is a St. Olaf and University of Minnesota graduate, and Mr. Woodside is an alumnus of Syracuse College of Forestry.

CHARLES A. STRACK, who replaced Mr. Blew in field technical service work out of Niagara Falls, is a 1950 graduate of Cornell.

CANADIAN NEWS

Fraser and Howard Smith Announce Promotions

DONALD A. FORBES has been appointed chief engineer of Fraser Companies Ltd. and subsidiaries, and is succeeded by **J. S. OVERBAGH** as assistant chief engineer. The latter is succeeded as assistant mill manager of Fraser Paper Ltd., Madawaska, Me., by **R. J. MARTIN**.

E. R. HUNTING has succeeded Mr. Martin as divisional chemist for Fraser Paper.

JOHN S. WILSON, former vice-president and manager of Dryden Paper Co., died recently at Uxbridge, Ont.



HOLD NEW SPOTS FOR MANDO

RODOLPHE PARADIS (left), named to be Resident Manager of Minnesota and Ontario Paper Co.'s Kenora, Ont., mill; **F. G. WILLIAMS** (right) takes over post of Resident Manager for the company's Fort Frances, Ont., mill.

Continued on page 22



Drying Paper Faster

Drying efficiency depends upon the ability of the dryer felt to take up water and to get rid of water—the drying rate of the felt itself.

Barrell Tour Boss L. D. Felts have a fast absorbing surface ply and fast vapor-eliminating surface—a double surface fabric with high capillary power. Note the close texture face surface above in contrast to the open weave back which offers approximately 30% greater evaporation area. The felt absorbs water faster—gets rid of water faster—improves paper-drying rate.

BARRELL TWO-PLY COTTON DRYER FELTS



Siamese • Tour Boss
L. D. Constructions
By Lawrence Duck Co.
Lawrence, Massachusetts

**BAR-L
DRYER
FELTS**

WILLIAM L. BARRELL CO.

52 Chauncy St., Boston, Massachusetts

prime pulps
for perfect papers

TELEPHONE:
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JOHNSEN & WETTRE

TELEGRAMS:
'WETTRE
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26 FARRINGTON ST.
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ALSO
EDINBURGH & MANCHESTER

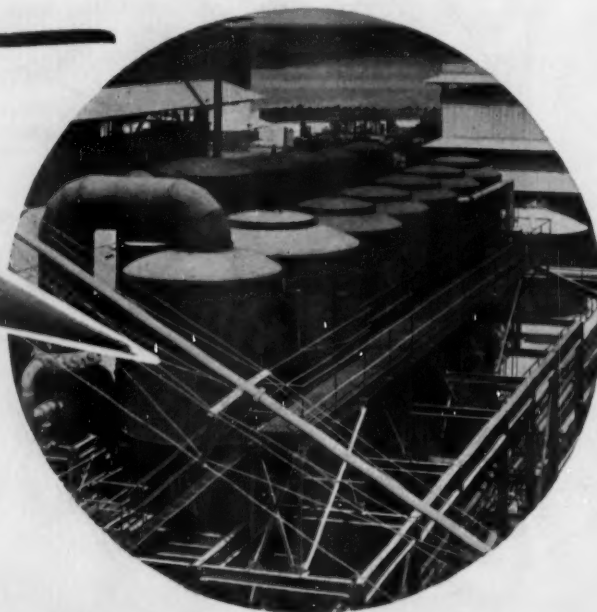
Resembling May



The
right start
here

Given only the process conditions, GOSLIN-BIRMINGHAM Engineers are prepared to design chemical process installations for your plant and take *full responsibility* for the process, workmanship and material. This complete responsibility, inside one fence, under one roof and by one organization . . . from slide rule to freight car . . . assures you of the ultimate in maximum efficiency at minimum cost!

Cuts
costs
here—



Six body, sextuple effect,
long tube, vertical film type
Black Liquor evaporator in service
at the new Jacksonville, Florida
mill of the St. Regis Paper Co.



G-B ENGINEERS are at your service
any time to discuss your requirements . . . without cost or obligation.

GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM • ALABAMA



value in a fine product
reflects the experience and
skills of its makers.

value in Fourdrinier wires is a matter of record ... paper quality and production records in mills throughout America reflect the fact that Appleton Wires are Good Wires!

APPLETON WIRE WORKS, INC., APPLETON, WISCONSIN





HANS LENZ (left), "Dard Hunter" of Mexico, arrives in Alaska to see new pulp mill. In middle is LAWSON TURCOTTE, Pres. of Ketchikan Pulp and Puget Pulp; at right, MEREDITH PARKER of Mexico City, who represents both Ketchikan and Puget and other suppliers to Mexican mills.

CANADIAN NOTES

OSWALD CRAWFORD, traffic manager of Powell River Co., Vancouver,

is a talking encyclopedia of freight rates and his advice has frequently been sought by interests outside the industry. "Os" was recently elected

president of the Canadian Industrial Traffic League.

WILLIAM S. REYNOLDS has been appointed technical assistant to the Powell River Co's technical division.

ROSS R. DOUGLAS, with the British Columbia forest service before serving with the Canadian army as a captain during the war, has been made manager of the woods division, Alaska Pine & Cellulose, Ltd., in Vancouver, B.C.

J. A. BARDSLEY, chief engineer, Howard Smith Paper Mills Ltd., has resigned owing to ill health and has gone to England to live. PAUL PALMER, formerly of the subsidiary Arborite Co., has succeeded him.

F. I. ANDERSON of Abitibi Power & Paper Co's Thunder Bay division has been elected chairman of the Mid-West branch of the Technical Section CPPA.

D. S. ABBOTT, president of Arborite Co., Howard Smith subsidiary at Montreal, is the new engineer for the entire Howard Smith group, continuing his former post.

EARL P. ENGNESS, formerly Vancouver, B. C. bag plant manager for St. Regis, has been made general superintendent of bag manufacturing for St. Regis at Montreal. W. M. McCURDY has succeeded at Vancouver.

PACIFIC COAST NEWS

Geo. McGregor Returns West As Cecil Taylor is Promoted

CECIL TAYLOR, who joined Columbia River Paper Mills as general superintendent a year ago, has been named production manager of both Oregon Pulp & Paper Co. and Columbia River Paper Mills.

GEORGE H. MCGREGOR, for past 9 years affiliated with Minnesota & Ontario Paper Co., International Falls, Minn., and previously general superintendent of a West Coast pulp mill and a Paper Institute instructor, became general superintendent of Columbia River Paper Mills Sept. 1.

JOHN McCLINTOCK, former kraft pulp foreman, is chief chemist for pulp and HOWARD J. LEECH was promoted from laboratory project chemist to chief chemist for paper-board, for Longview operations of Weyerhaeuser.

Continued on page 26

COATED
LEDGER
INDIX
NOTE
TABLET
OFFSET
NOTION BAG

FOLDER
ONION SKIN
OYSTER PAIL
DRAWING
SAFETY

INSULATING
NOVEL
CORRUGATED



STANDARDIZED

STARCHES

FOR USE IN THE

MAKING OF HIGH-

GRADE PAPERS

AND BOARDS

Technical Service in connection with your specific problems is available upon request.

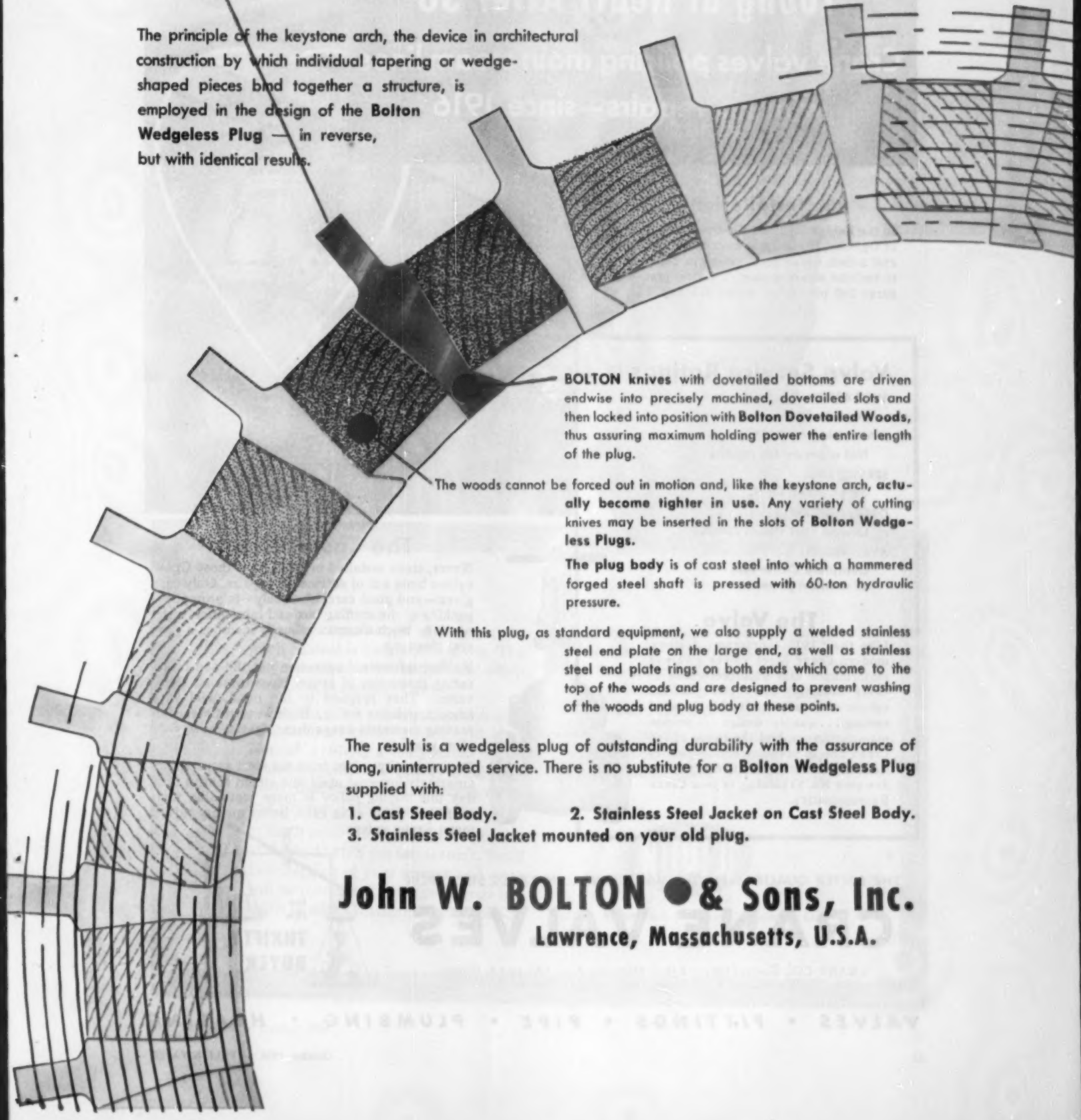
CLINTON FOODS INC.

Corn Processing Division

CLINTON, IOWA

Knives are everlastingly locked in • BOLTON Wedgeless Plugs

The principle of the keystone arch, the device in architectural construction by which individual tapering or wedge-shaped pieces bind together a structure, is employed in the design of the **Bolton Wedgeless Plug** — in reverse, but with identical results.



BOLTON knives with dovetailed bottoms are driven endwise into precisely machined, dovetailed slots and then locked into position with **Bolton Dovetailed Woods**, thus assuring maximum holding power the entire length of the plug.

The woods cannot be forced out in motion and, like the keystone arch, actually become tighter in use. Any variety of cutting knives may be inserted in the slots of **Bolton Wedgeless Plugs**.

The plug body is of cast steel into which a hammered forged steel shaft is pressed with 60-ton hydraulic pressure.

With this plug, as standard equipment, we also supply a welded stainless steel end plate on the large end, as well as stainless steel end plate rings on both ends which come to the top of the woods and are designed to prevent washing of the woods and plug body at these points.

The result is a wedgeless plug of outstanding durability with the assurance of long, uninterrupted service. There is no substitute for a **Bolton Wedgeless Plug** supplied with:

1. Cast Steel Body.
2. Stainless Steel Jacket on Cast Steel Body.
3. Stainless Steel Jacket mounted on your old plug.

John W. BOLTON • & Sons, Inc.
Lawrence, Massachusetts, U.S.A.

Young at Heart After 38

Crane valves policing main steam lines with no repairs—since 1916

The Installation

In the Lehigh Portland Cement Co. plant at Oglesby, Ill. Original installation of 6- and 3-inch Crane steel valves in boiler-to-turbine steam piping. Working pressure: 160 pounds at about 475 deg. F.

Valve Service Ratings

SUITABILITY:

Hard to Beat

MAINTENANCE COST:

Not a penny for repairs

SERVICE LIFE:

38 yr.—still O. K.

OPERATING RESULTS:

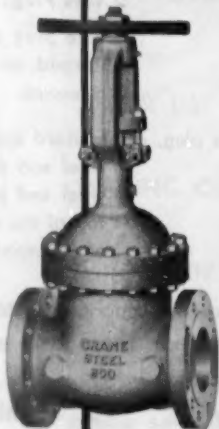
Lowest cost steam control

AVAILABILITY:

Complete Crane line
of modern patterns

The Valve

Like their 1916 counterpart designs, modern Crane Steel Valves give you performance that wins preference in every industry. They give you the values of steady leadership in steel casting . . . quality design . . . precise manufacturing. And the range of the Crane line in pressure classes, materials, and patterns, meets every need. See your No. 53 catalog, or your Crane Representative.



The Case History

Never, since installed in 1916, have these Crane valves been out of service for repairs. Only care given—and good care, obviously—is prompt repacking of the stuffing box and lubrication when needed. Such attention usually includes a general clean-up.

Neither infrequent operation nor the non-lubricating properties of steam have troubled these valves. They respond to the handwheel with smooth, positive action. High wear-resistance in seating materials keeps them tight as new, year after year.

Buying quality valves from the start assured this amazingly low-cost main line steam control. Today this buying policy is more justifiable than ever. And today as in 1916, better quality valves mean Crane valves.

THE BETTER QUALITY... BIGGER VALUE LINE... IN BRASS, STEEL, IRON

CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas



VALVES • FITTINGS • PIPE • PLUMBING • HEATING

Control that Pitch!



In the manufacture of fine papers, pitch control is an absolute must. The only question: what is the most effective, most economical way?

For the pitch conditions which prevail in most mills, you'll find that Nopco® 1187-X, a dehydrated naphthalene condensate readily soluble in water, tends to keep your screens, wires, and press rolls free from pitch.

You'll need only from 2 to 4 pounds of Nopco 1187-X per ton of stock. You'll find clogging of your screens and wires will be minimized, your press rolls less liable to stick. Just drop Nopco 1187-X,

dry, in the beater before you add alum. Or if preferred, you can dissolve it in water and introduce it at any point before the screens. Either way, you'll control pitch and speed production.

Write today for testing sample of Nopco 1187-X. Nopco Chemical Company, 344 Water Street, Harrison, N. J.



PLANTS: Harrison, N. J. Cedartown, Ga. Richmond, Calif.

PACIFIC COAST NOTES

ROBERT T. KIMBERLIN has been elected vice pres. of Crown Zellerbach and is succeeded as secretary by **DONALD R. SCHMIDT**.

ROBERT TOWNE, power plant supt., Fibreboard Products, Port Angeles, Wash., was married only a few months ago and recently toured California with his bride.

MR. NORMAN ANDERSON, of Medford, Wisc., has been appointed district mgr. for Pettibone-Mulliken Corp. (Cary Lift div.) on the Pacific Coast, including British Columbia. Mr. Anderson formerly was special rep. for Modern Machinery Co., Seattle, Wash.

HOMER M. BROCK, formerly of Buffalo Electro-Chemical Co., is now assistant purchasing agent of CZ central engineering, Seattle, Wash.



CROWN Z PROMOTIONS

FRANCIS W. FLYNN (left), formerly Asst. Kraft Mill Supt. at Camas, Wash., transferred to Port Townsend division as Asst. Resident Manager. **PETER M. WILKIE** (right) becomes Asst. Kraft Mill Supt. at Camas; and **MAX CUSTIS** (center) moves up to Mr. Wilkie's former position of Kraft Mill Foreman.

G. ELMER EMIGH will represent machinery lines of Sandy Hill Iron & Brass Works on the Pacific Coast. He was former general supt. at the Fir-Tex mill in St. Helens, Ore., which he helped build, and was superintendent with Pioneer-Flintkote and Crown Z mills in the west.

JACK WILCOX, manager of process equipment div., Electric Steel Supply Co., spent two weeks with his family exploring waters and passages of Puget Sound by rented cruiser.

JOHN G. ROBINSON, chairman of California Container Corp., CC of A subsidiary, announces appointment of **WALTER L. SWEENEY** as assistant general manager of the company shipping container operations in Los Angeles. Mr. Sweeney moved from the Oakland, Calif., plant where he was general manager of folding cartons.

PETER M. WILKIE was promoted from shift foreman to assistant superintendent of kraft mill, CZ Camas.



DELIVERED BY JEEP

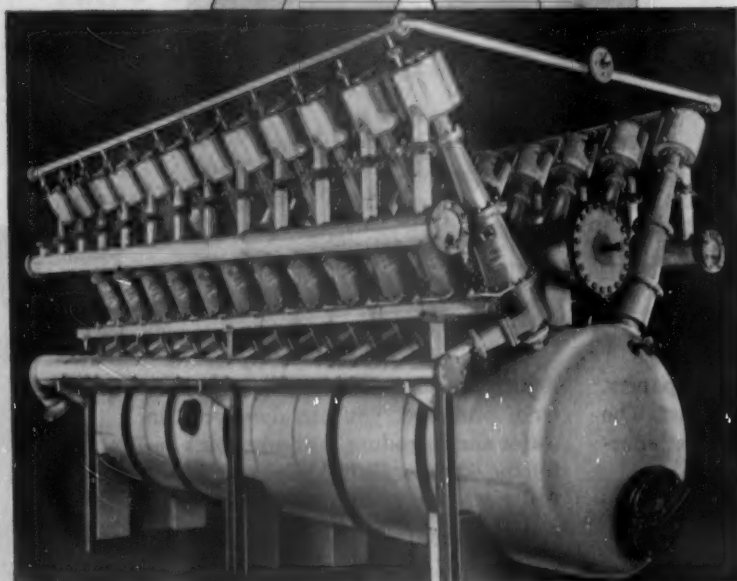
MRS. JAMES F. (DOROTHY) GRIEVE, wife of Portland, Ore., Mgr. of C. C. Moore & Co., delivered guests from her home on Oregon beach right through legs and sand to the Gearhart Convention hotel—here she has **DILL DARMSTADT** of Babcock & Wilcox, New York City, in background.

Continued on page 30

DECULATOR-CLEANER

A GREAT STRIDE FORWARD

*Along the Path of
Improved Paper Making*



With the advent of the Deculator-Cleaner, something has been added to the several production advantages enjoyed by the many paper mills already using The Deculator. Now you can clean your stock at the same time you deaerate it and use no more horsepower than is required for the cleaning operation alone.



THE ROTAREAD CORPORATION represented by
CLARK & VICARIO CO.
Bronxville, N. Y.



Mathieson Chlorine: *worth its salt*

Row upon row of mercury cells characterize the uniform high purity of Mathieson chlorine. These cells decompose a salt solution by electrolysis to form a sodium amalgam and wet chlorine gas. Subsequent processes dry the gas, liquefy and cool it, resulting in chlorine approximately 99.9% pure. Above is one of five producing units from which Mathieson supplies quality chlorine to industries from Canada to the Gulf.

Consistent product quality is typical of all Mathieson chemicals. In addition, Mathieson offers consumers the protection of multi-plant production facilities . . . 3 major alkali plants, 7 sulphuric acid plants, 6 caustic

soda plants, 3 ammonia plants . . . as well as practical technical assistance with chemical handling and application problems.

In planning your chemical requirements call in your Mathieson representative. Perhaps you can buy to better advantage from one of America's largest producers of basic industrial chemicals.

OLIN MATHIESON CHEMICAL CORPORATION



INDUSTRIAL CHEMICALS DIVISION

BALTIMORE 3, MARYLAND

MATHIESON

2622

CAUSTIC SODA • SODA ASH • CHLORINE • SULPHURIC ACID • SULPHUR • AMMONIA • NITRATE OF SODA • BICARBONATE OF SODA • CARBON DIOXIDE • SODIUM CHLORITE • CALCIUM HYPOCHLORITE
ETHYLENE OXIDE • ETHYLENE GLYCOL • DIETHYLENE GLYCOL • TRIETHYLENE GLYCOL • POLYGLYCOLS • DICHLOROETHYLENE • ETHYLENE DICHLORIDE • METHANOL • SODIUM METHYLATE • ETHYLENE DIAMINE



Advantages —

- 1 EASIER TO BURR
- 2 HOLDS PATTERN LONGER
- 3 MORE UNIFORM GRINDING ACTION

IN mill after mill the new G Bond Norton Pulpstone is demonstrating these advantages. Many mills have entered repeat orders because they find that this stone gives them the highest quality, cleanest pulp for longest periods. It is another Norton improvement to help you meet today's competitive conditions. Ask your Norton pulpstone engineer about the new G Bond stone in ALUNDUM and 38 ALUNDUM* abrasives.

NORTON COMPANY, WORCESTER 6, MASS.

**Norton Company of Canada, Ltd.
Hamilton, Ontario**

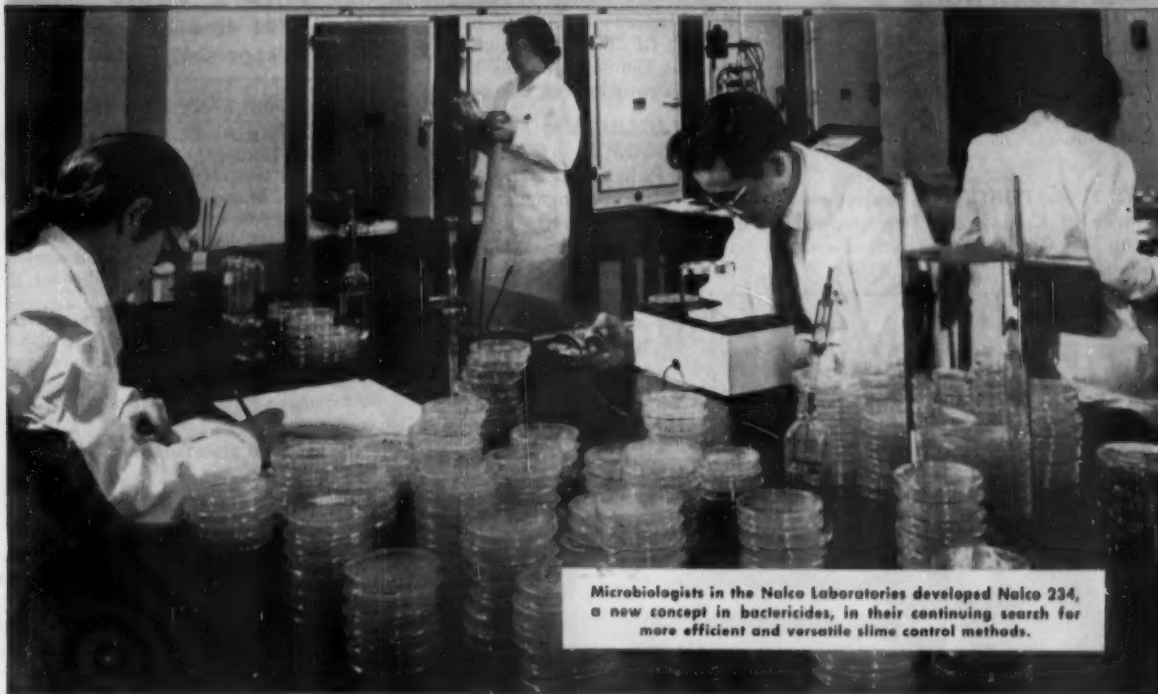
* Shown in illustration above



Making better products...to make other products better

Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Norbide Products

An Entirely New **CHEMICAL**
NON-MERCURIC • NON-PHENOLIC



Microbiologists in the Nalco Laboratories developed Nalco 234, a new concept in bactericides, in their continuing search for more efficient and versatile slime control methods.

Fast Action **SLIME CONTROL**



with *Nalco* **234**

NALCO 234 is a new organic liquid formulation, developed and proved to meet an industry-wide need for a *quick-killing, non-odorous* bactericide for maintaining clean systems in all types of papermaking—including food packaging and sanitary papers. Combining the advantages of excellent slime control with powerful dispersing action on fibrous and gelatinous masses in machine systems, Nalco 234 reduces breaks on machines, decreases total down time, and helps produce a more uniform sheet.

Write Nalco, or call your Nalco Representative for full data on fast-action Nalco 234.

NATIONAL ALUMINATE CORPORATION
6213 West 66th Place • Chicago 38, Illinois
In Canada: Alchem Limited, Burlington, Ontario

THE *Nalco* **SYSTEM**

Serving the Paper Industry through Practical Applied Science

PACIFIC COAST NOTES

WILLIAM McKENZIE, director of engineering for Simpson Logging Co., Shelton, Wash., has moved to Everett, Wash., as resident engineer for Everett Pulp & Paper Div. of Simpson.

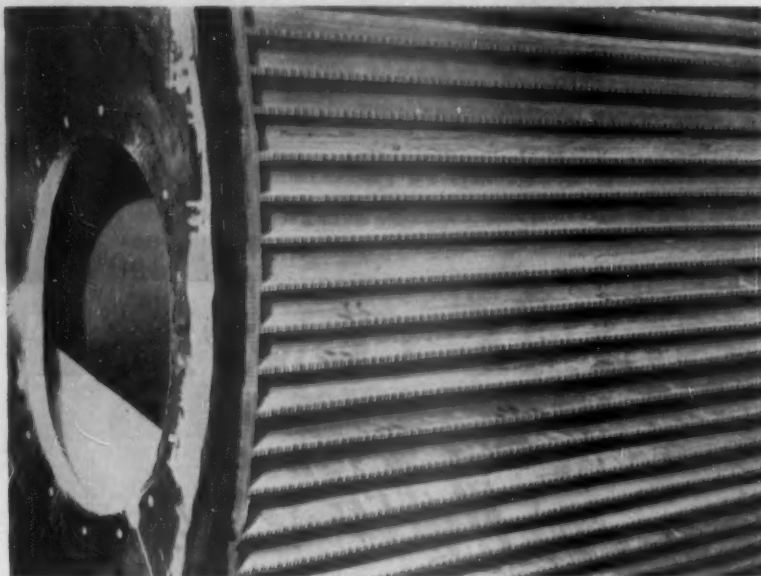
LEE F. MAYBACH, CZ project engineer at Camas, has been named dean of Crown Zellerbach Paper School to succeed **FRANCIS W.**

FLYNN, who moved to Port Townsend as assistant resident manager. **TOM W. LEEDHAM**, industrial engineer at Camas mill, has been selected as principal of the school.

MISS ELIZABETH MOODY, daughter of **ANSON B. MOODY**, v. p. of Everett Pulp & Paper Div. of Simpson Logging, is engaged to marry **William M. Campbell**, of Wilmington, Del., a graduate of U. of Delaware.

CHEMICAL-PROOF

Associated in Serving the West



An example of our complete fabrication and lining service.

CHEMPROOF pioneered in field and shop linings for all types of chemical process equipment and piping for pulp and paper industry.

CHEMPROOF specialists are experienced in the application of the right coating for the particular mill process, including Neoprene, Phenolics, Polyvinyl chlorides and rubber.

CHEMPROOF distributes Uscolite pipe and fittings, and fabrications. Representing U. S. Rubber Company.

GACO maintenance coating air drying liquid Neoprene, representing Gates Engineering Company.

CHEMICAL PROOF CORPORATION OF SEATTLE

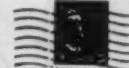
625 Alaska Street, Seattle, Washington—Tele: MAin 5805

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12049 Regent View Avenue, Downey, California—Tele: TOpaz 9-3466

CHEMICAL PROOF CORPORATION OF LOS ANGELES

600-16th Street, Oakland, California—Tele: GLencourt 2-3575



The Editor

PULP & PAPER

1791 Howard Street

Chicago 26, Illinois

"Best Mill Story Ever Printed"

Belatedly but sincerely I want to compliment you on the American Box Board story (June 1954 issue of **PULP & PAPER**). In our opinion it was the best mill story ever printed.

For it not only described the mill with accuracy but it went behind the scenes to seek out the philosophy behind the design.

I understand you will write up Bowers soon. I think that you are wise in holding back until any mill that you write about is really in operation. Prominent industry "Affiliate"

Thanks to the Fultons

The Editor,
PULP & PAPER,
1791 Howard St., Chicago 26, Ill.

Like a bubbling spring does not always bubble loud enough to be heard or seen, many things in life make us quiet. But there is always time to pause and give thanks for the many acts of kindness bestowed upon us. John and Claire Fulton gave much of themselves to our conventions over many years; they helped make our conventions to always be remembered.

MRS. CHARLES (EMMA) ACKLEY,
West Linn, Ore,

John Fulton, now general purchasing director of Crown Z, and Mrs. Fulton, were welcomed back this year to the Coast Gearhart convention. They are veterans of many Coast convention committees.

"Valuable Compendium"

I want to congratulate you on the splendid edition of **PULP & PAPER**, the 27th Annual Review, which gives a statistical recapitulation of the industry and its resources. This is indeed a most valuable compendium.

STUART MOIR,
Forest Counsel,
Western Forestry & Conservation Assn.,
Portland, Ore.

"A Genuine Service"

I have received a copy of the **WORLD REVIEW** (1954) of **PULP & PAPER** and am very much thrilled by it.

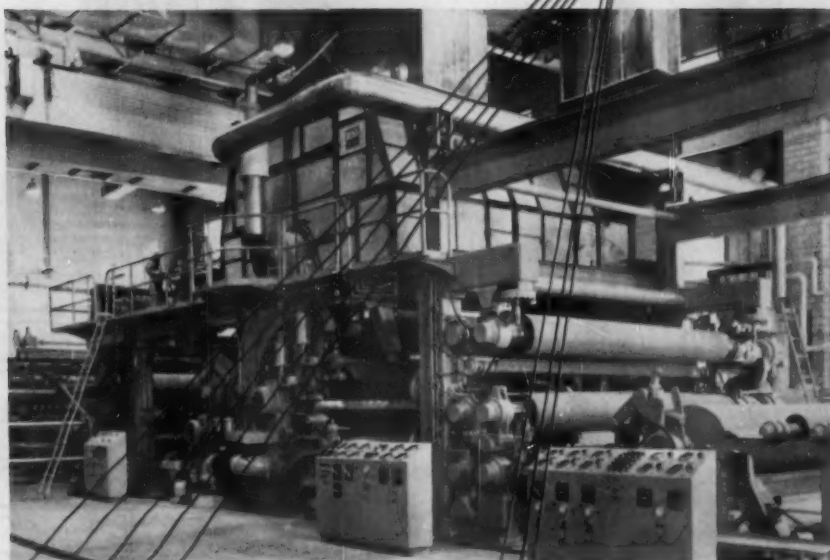
Never have I seen anything to equal this in genuine service to the industry—and so perfectly right for the times.

NARD JONES
Chief Editorial Writer
Seattle Post-Intelligencer

Performance

that has been proven in more than 95% of the industry's mills over 33 years speaks for itself...

ROSS AIR SYSTEMS



- 1 Properly heat the room.
- 2 Ventilate the room for the comfort and health of the men.
- 3 Assist the machine dryers to evaporate the water in the sheet.
- 4 Economically remove the resulting vapor.
- 5 Introduce in the most efficient and economical manner the vast quantity of air required for the removal of vapor.
- 6 Prolong the life of the dryer felts and preserve the building itself from deterioration.
- 7 Assist in maintaining a uniformly dried sheet of the proper moisture content.
- 8 Perform many other smaller but equally important duties, such as cooling the calender roll, cooling the electric motor drives, handling the trim from the machines, and other important functions.



J. O. ROSS ENGINEERING CORPORATION

MANUFACTURERS OF AIR PROCESSING SYSTEMS

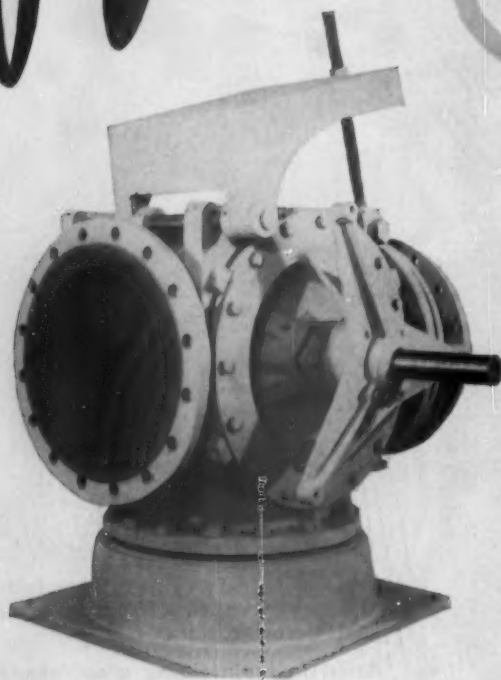
444 MADISON AVENUE

NEW YORK 22, N. Y.

ATLANTA • BOSTON • DETROIT • CHICAGO • SEATTLE • LOS ANGELES
ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

Good Bleaching

**STARTS
HERE**

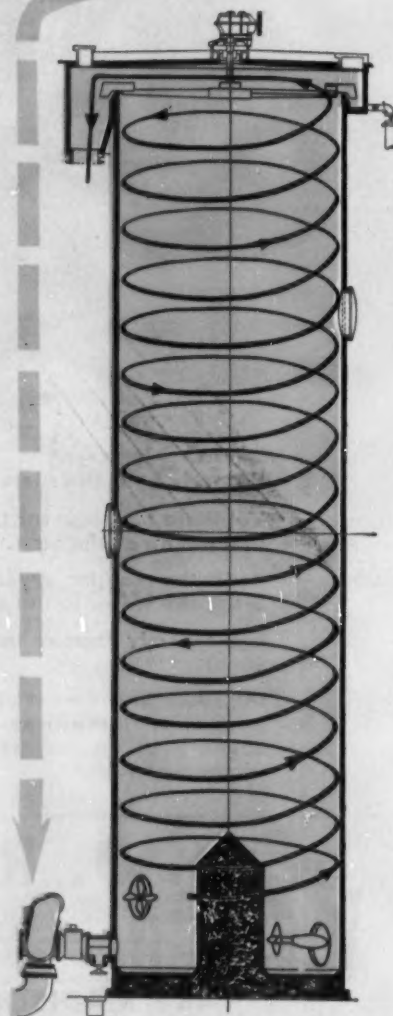


IMPCO CHLORINE SAVER-MIXER

A new high intensity type chlorine mixer which gives a quick intimate mixing result, improving retention in the main tower and insuring uniformly chlorinated pulp.

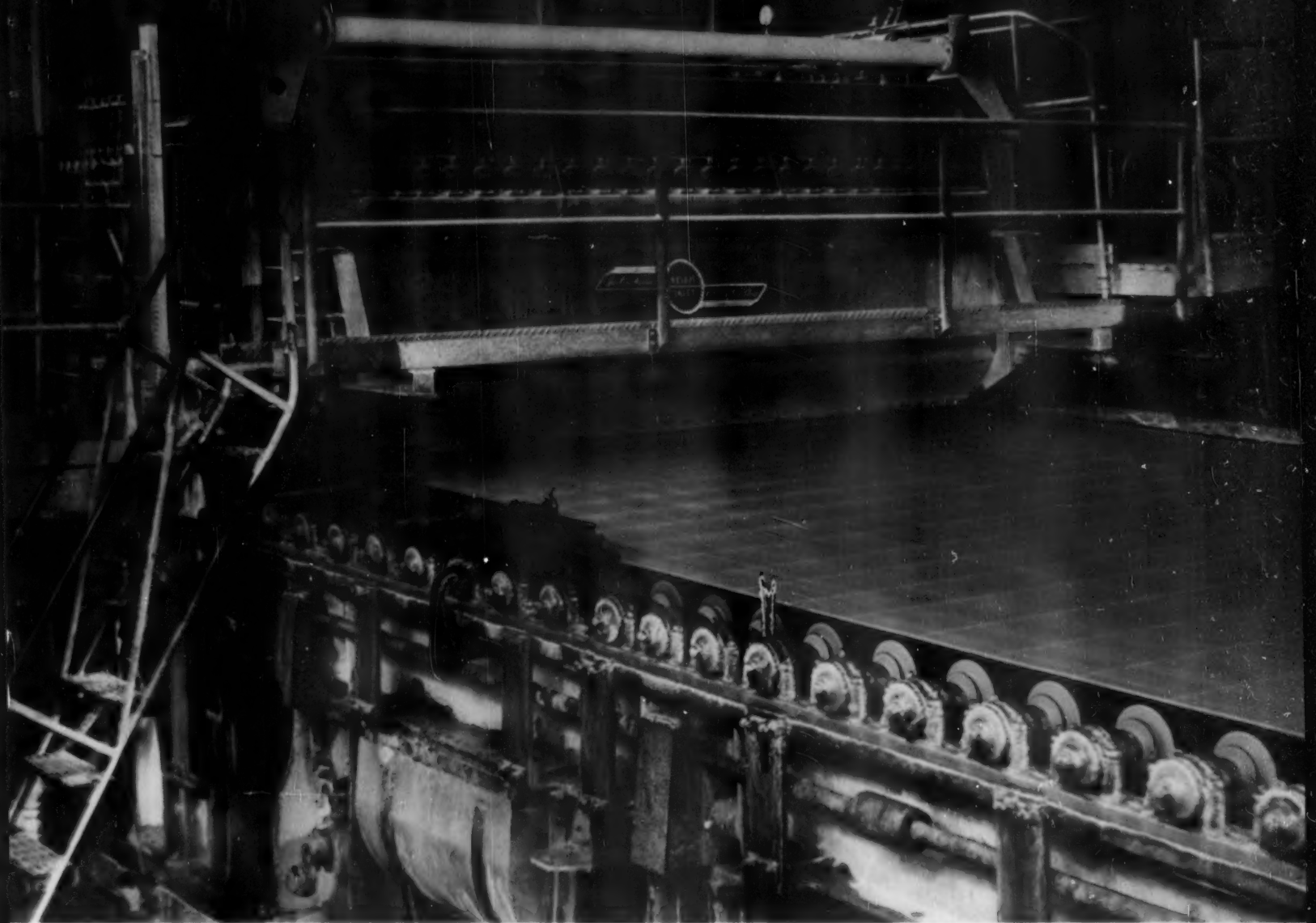
This unit showed chlorine savings of 50¢ per ton or at a 300 ton daily production rate, over \$40,000 per year, paying for the mixer in just a few months.

**IMPROVED
MACHINERY INC.
NASHUA, NEW HAMPSHIRE**



Shorbrooke Machineries Ltd., Shorbrooke, Quebec manufacture similar equipment in Canada.

C3-a



FIRST OF FOUR patented Beloit Air-cushioned Inlets which are now in operation at Consolidated Water Power & Paper Company. Stock level inside is automatically held constant at all machine speeds. Self-cleaning rectifier rolls and controlled approach flow help to produce a level, high-quality sheet of uniform caliper.—*Beloit Iron Works, Beloit, Wisconsin.*

WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE!

BELOIT

PAPER MACHINERY

Redesign of Recausticizing System Results in Reduced Initial and Operating Costs

Green Liquor Section Gets "New Look" Based on Principle of Selective Density Feeding

Latest development in the Dorr Continuous Recausticizing System is the redesign of the green liquor clarifier and dregs washer based upon the recently proven principle of Selective Density Feeding. The result of four years research and field testing, this new design minimizes operating attention and substantially reduces both initial and operating costs in the green liquor section. At the same time there is no sacrifice in operating efficiency. Selective Density Feeding provides increased tank utilization and an overflow clarity comparable to that from tray clarifiers previously used in the System.

Multiple Compartment Eliminated

What is Selective Density Feeding? Basically it involves introducing feed at a point in the tank where the solids concentration is

similar to feed concentration. To apply this principle, the green liquor clarifier and dregs washer have been redesigned to eliminate multiple compartments served by separate mechanisms. Each unit now consists of a single compartment with one mechanism and incorporating a large diameter deep feedwell extending well down toward the bottom of the tank. The ratio of depth to tank diameter is adjusted to bring into balance the various functions essential to good clarification. Hydraulically, the flow patterns produced are controlled to make maximum utilization of overall tank volume.

Additional Soda Recovery

A further improvement to the System is the addition of a time clock to the green liquor clarifier underflow pump to control re-

moval of a small amount of settled dregs every 15 minutes. A mixing tank with a detention time of 30 minutes insures thorough mixing of dregs and wash water and results in additional recovery of soda values in the dregs washer.

Operation Simplified

Selective Density Feeding applied to the Dorr System means substantially lower investment costs, lower maintenance costs, and simplified operation. In existing Systems the green liquor station can be converted to this new unit design and in most cases will give equal performance to that of tray units with the added advantage of greatly simplified operation.

If you'd like more information on these new developments in the Dorr Continuous Recausticizing System, write The Dorr Company, Stamford, Conn., or in Canada, The Dorr Company, 26 St. Clair Avenue East, Toronto 5.

from

Evadale

**IN THE "PINEY WOODS"
OF EAST TEXAS
comes**

A NEW NAME IN PULP AND PAPER

Next month at Evadale, Texas, East Texas Pulp and Paper Company will begin the production of fine quality pulp and paperboard from East Texas Pine and gum.

Production will consist of bleached kraft market pulp and bleached sanitary food board. A large percentage of the pulp will be marketed; the rest will be used in East Texas' own mill for production of paperboard for milk-container, carton, plate-and-tray, tag, file-folder, pail, milk-bottle-hood and similar stock, as well as bleached bag and other types of heavy weight bleached kraft paper.

The Mathieson chlorine dioxide bleaching system used produces a desirable "high brightness" pulp, that retains maximum strength. In addition, our special technique of blending short-fibered hardwood pulp and long-fibered softwood pulp in any desired percentages, and the use of a completely new and revolutionary machine coating assure paperboard customers the industry's finest printing surface.

PULP CUSTOMERS... may choose between two grades of market pulp: a long-fibered quality from pine and a short-fibered one from gum. Both grades are chlorine-dioxide bleached to a high brightness and exceptionally clean, yet retain maximum strength.

PAPER CUSTOMERS... will be assured products that meet the most exacting requirements as to workability, uniformity, cleanliness, printability, strength—all at competitive prices.

QUICK DELIVERY by rail or truck—emergency orders will be handled on an individual basis.

EAST TEXAS

PULP & PAPER CO.



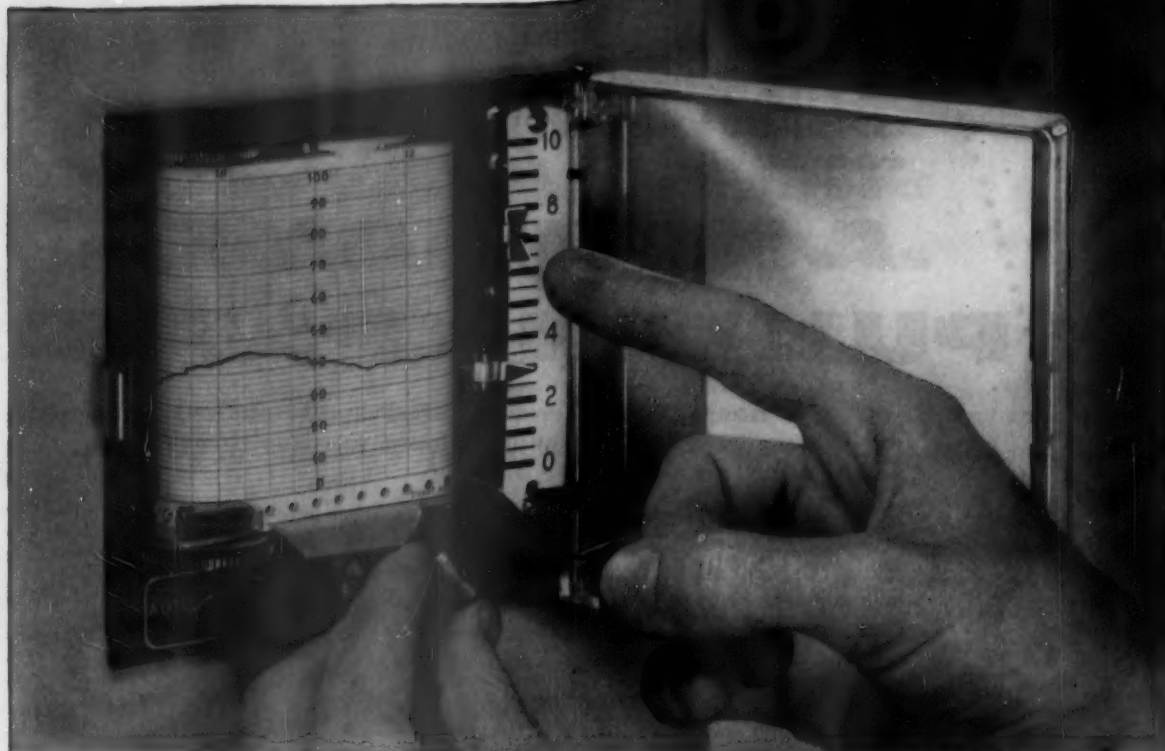
Evadale
Texas



Telephone Silsbee, Texas
Evergreen 5-3711
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122 East 42nd St., New York City
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Whatever You Make . . .
You Can Make It Better With *Eastex* Products

WHAT'S NEW AT BRISTOL . . .



BRISTOL'S "HUMAN-ENGINEERED" METAGRAPHIC RECORDER, with its easy-to-read scale, high-visibility fluorescent pointers and shadow-proof door has earned the distinction of being the "biggest little instrument in the business."

Instrument men call Bristol's METAGRAPHIC Recorder "... the biggest little instrument"

Sounds contradictory, but it's true. Take a look at one of our new METAGRAPHICS mounted on a panel board alongside of other instruments. The Bristol unit stands out — seems bigger than the rest — although chances are it's actually smaller (5" x 5"). The answer is that the Bristol instruments have been "human-engineered", making them easy to read, and clearly visible at greater distances.

The air-operated METAGRAPHIC, which records pressure, temperature, vacuum, flow, differential pressure, and liquid level, offers these big advantages:

SIMPLICITY . . . fewer moving parts, fewer adjustments, and less service required. Range changes can be made in seconds. True plug-in service.

CONTINUOUS VALVE-POSITION INDICATION . . . on same instrument scale as set-point scale, gives continuous data on control valve position—makes "bumpless" transfer possible simply by matching pointer positions — no need to read actual scale values — minimizes reading errors — speeds operations.

CONTINUOUS OPERATION . . . complete unit can be retracted for inking pen, and for set-point and zero adjustment without disturbing record or control.

Get the whole story on the "human-engineered" METAGRAPHICS — how they can help you get more accurate measurements, faster and easier. Write us today. The Bristol Company, 142 Bristol Road, Waterbury 20, Conn.

BRISTOL

POINTS THE WAY IN
HUMAN-ENGINEERED INSTRUMENTATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

BETTER PAPER THROUGH HERCULES CHEMICALS



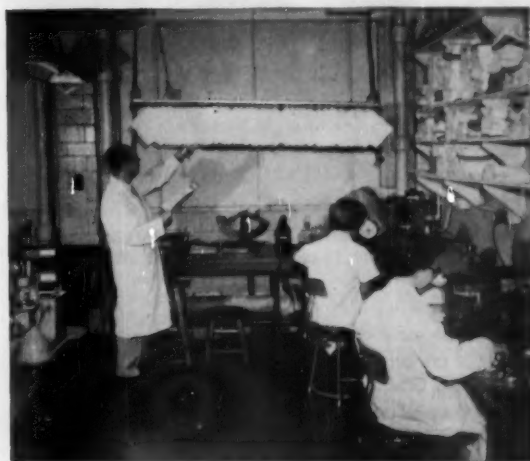
For high wet-strength at an economical cost, more and more paper and board mills are specifying Hercules Kymene.[®]

Ready to use, easy to handle, Kymene is available promptly no matter where you are located. This popular cationic urea-formaldehyde resin has excellent stability in dilute solutions and has been proving its value wherever used.

For additional details on Kymene wet-strength resin or other paper-making chemicals, contact your local Hercules technical representative. Or write Hercules for descriptive booklet.



PRE-PASTED WALLPAPER—This new and novel "do-it-yourself" way to hang paper is gaining fast in popularity. Pre-pasted paper relies on Kymene to retain its strength when immersed in water prior to application. Whenever you need wet-strength, specify Kymene.



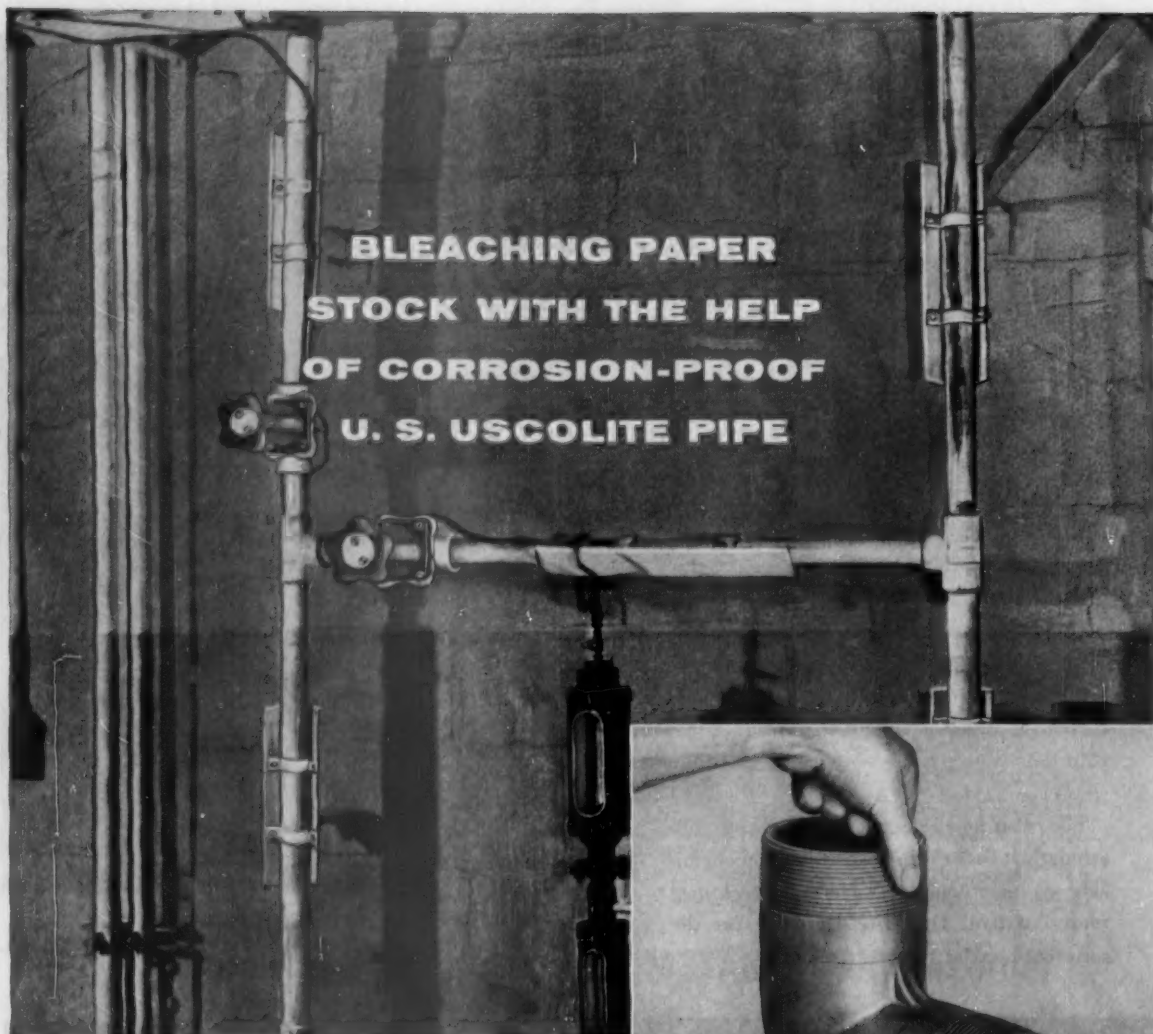
CONSTANT RESEARCH—Typical of Hercules paper-making research facilities is this laboratory at Wilmington, Delaware, where thousands of samples of paper are tested under varying conditions of use. These facilities are available in helping solve your problems.



QUICK DELIVERY—Produced at Hercules plants in Savannah, Georgia, and Mansfield, Massachusetts, Kymene, like all Hercules' paper-making chemicals, is readily obtainable from storage facilities located strategically from coast-to-coast.

Paper Makers Chemical Department
HERCULES POWDER COMPANY

965 King Street, Wilmington 99, Delaware



Milk of lime rotameter, used in the control of the pH of the stock in a double-shaft mixer. The piping is U. S. Uscolite with Uscolite (Hills-McCanna) valves.

The paper mill, located in Pennsylvania, selected U. S. Uscolite® plastic pipe because it's immune to the corrosive chemicals used in the bleaching process, and requires *no up-keep*. The piping previously used just couldn't stand the gaff.

Made by United States Rubber Company, Uscolite is an extremely tough but lightweight thermoplastic pipe. It imparts no odor, taste or discoloration. It is threaded and assembled with ordinary piping tools—*without* special preparation. Uscolite is in use in thousands of installations in every industry where constant control of chemicals, acids or corrosion is a problem.



Uscolite pipe and fittings are made in the broadest and largest line of stock sizes on the market. Sizes run from ½" to 6".

For replacement or completely new piping, get in touch with any of our selected distributors or any of the 27 "U.S." District Sales Offices or write to address below. Immediate delivery of standard sizes and threaded fittings. The Hills-McCanna Uscolite valve is available for your piping assembly.



"U. S." Research perfects it

"U. S." Production builds it

U. S. Industry depends on it.

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Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting



**HERE'S
PROOF!**

E.D. Jones

PULP-MASTER®
with new Mark II Rotor
defiberizes better, faster!

"The results are as good as any we could wish for," says the production manager of a mill making sulphite and sulphate bonds. "We've reduced the horsepower hours for pulping bond broke from 187 to 60."

The slides tell the story. Taken from an actual run, under mill conditions, they graphi-

cally demonstrate the superiority of the Pulp-Master with the new Mark II rotor over conventional pulping methods.

The Pulp-Master is equally effective on baled pulp, broke, bagasse, waste paper or other material. Ask your Jones representative — or write direct for details.

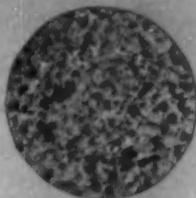
E.D. Jones

E. D. JONES & SONS COMPANY
Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Actual unretouched "shadowgraph" photos of papers made of stock taken from run of hard-pressed unbleached pulp in PULP-MASTER with Mark II Rotor, at intervals shown.

After
10 min.



After
30 min.

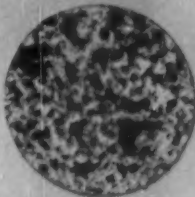


After
60 min.

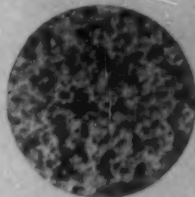


Actual unretouched "shadowgraph" photos of papers made under same conditions from same stock while being defiberized by conventional pulping method, at intervals shown.

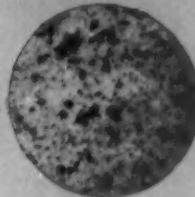
After
10 min.

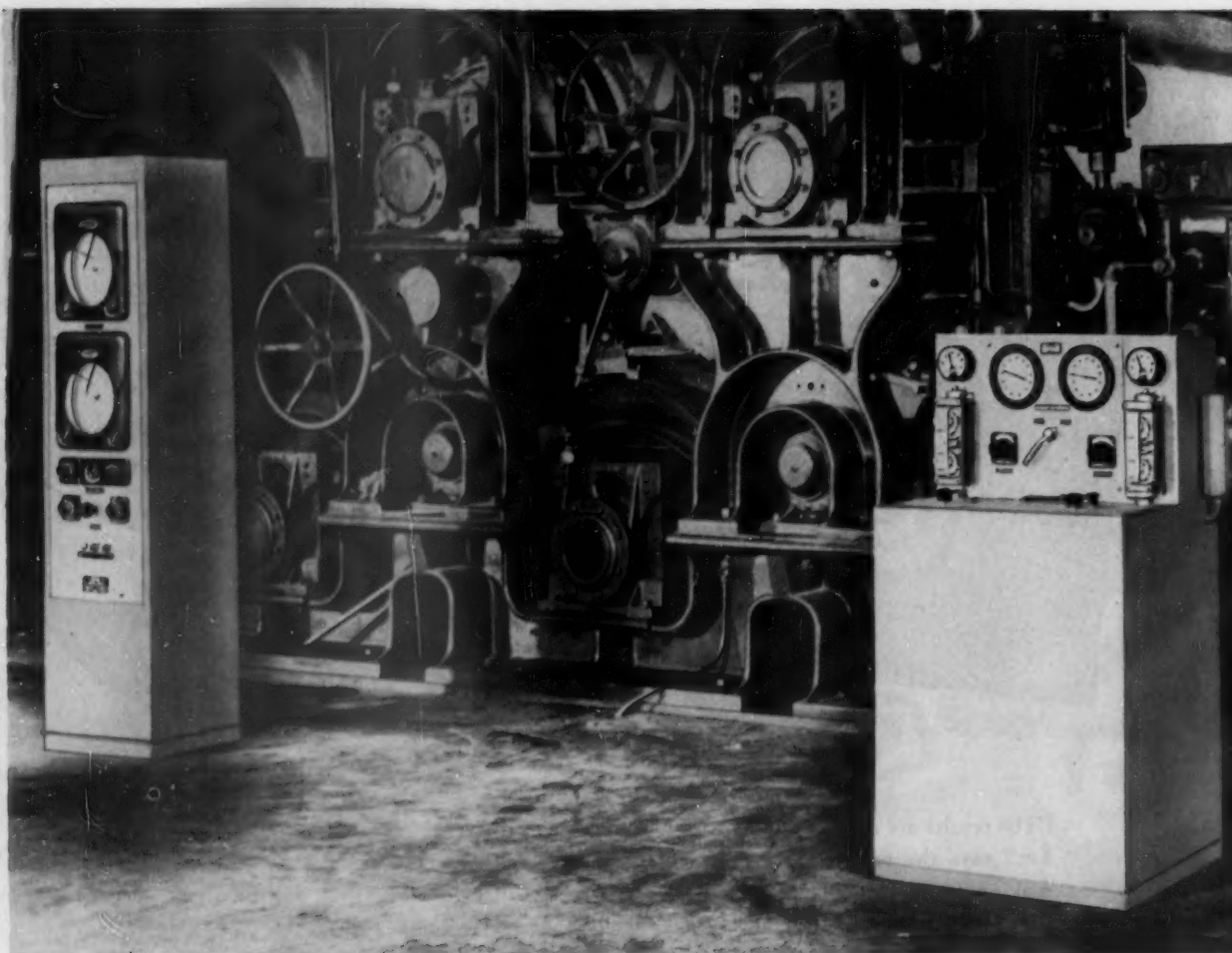


After
30 min.



After
60 min.





Increases Tonnage 10% with New

A mill that manufactures dissolving pulp reports, "We've increased our pulp tonnage by 10% since installing a Masoneilan Moisture Control System. And we've cut rejects due to incorrect moisture from 10% to 1%." Another mill manufacturing board claims, "Our production is up 7% a day with Masoneilan's New Moisture Control System."

And that's just part of the story. Typical of many other paper manufacturers of all kinds using Masoneilan Controls,

these mills are now making a *better, more uniform* paper at *lower cost* with the versatile new Masoneilan Moisture Control System. Here's how and why:

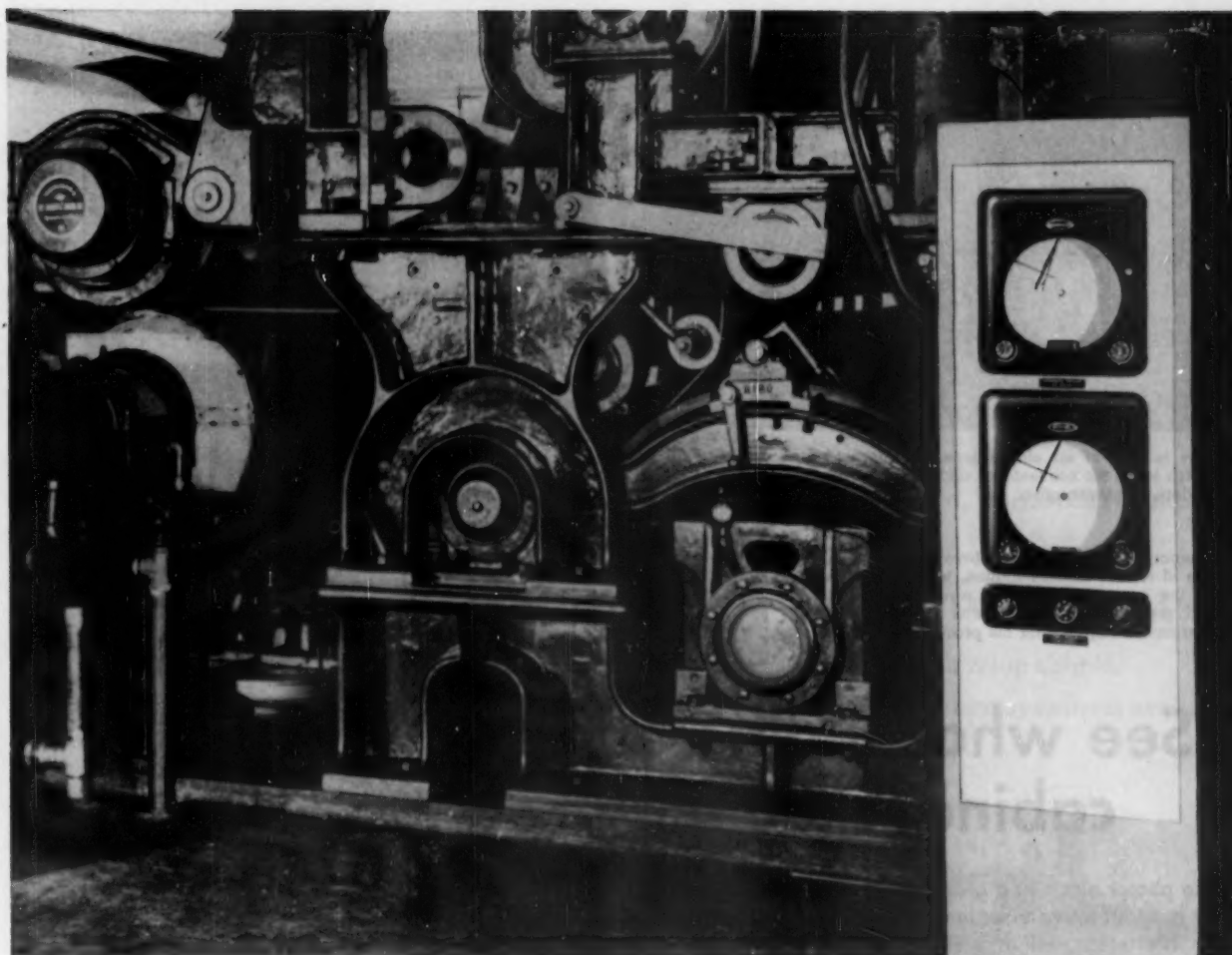
A Masoneilan Moisture Control System maintains an average moisture content across the sheet. Does not rely on "spot" measurements.

It controls moisture content at each of several points on the machine — from as high as 50% to as low as 3%.

Sensitive yet stable, it holds moisture content accurate within $\pm \frac{1}{2}$ of 1%.

Can be used for any speed machine — any width machine. Is suitable for *all* grades or weights of paper.

Provides individual pneumatic break control at each control station. Cuts downtime due to dry breaks . . . speeds recovery since it automatically handles steam to machine under all conditions.



Masoneilan Moisture Control System

Eliminates human errors — makes for more uniform sizing and coating. Pays for itself in a very short time — in some cases in less than a week.

Points up machine troubles such as improper drainage, variations in sheet finish, changes

in press operation, freeness, consistency, felts, or air removal.

If you're not presently using it, you'll want to know more about what this versatile Moisture Control System can do for your mill. Drop us a line and we'll send complete information.



MASON-NEILAN REGULATOR CO.

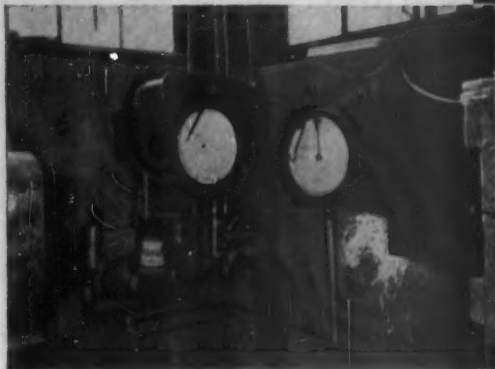
1181 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Odessa • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Dallas • Seattle
Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

CONTROLS MOISTURE CONTENT AT . . .

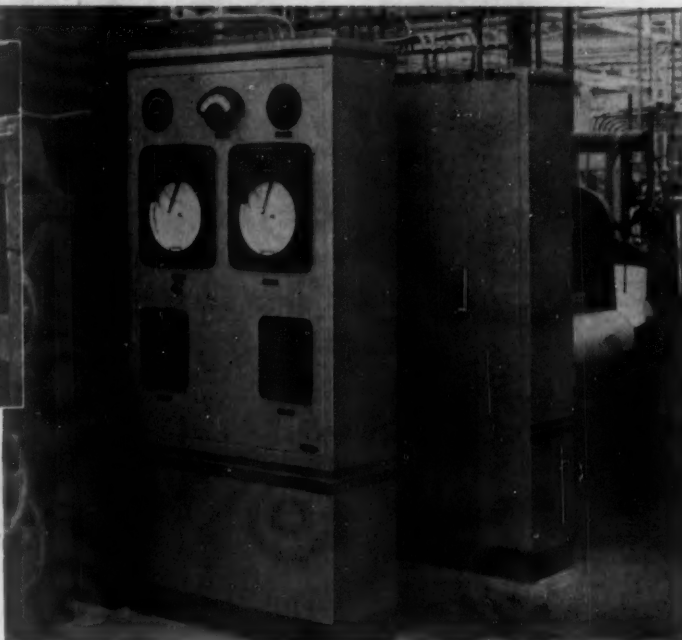
Breaker Roll
Single or Multiple
Dryer Sections
Size Tub
Coating Press
Reel

Masoneilan Moisture Control System is manufactured under Mason-Neilan Patent No. 2,659,987 Dated November 24, 1953.



This is part of an old-fashioned installation which lacks the convenience and efficiency of modern instrumentation. ↑

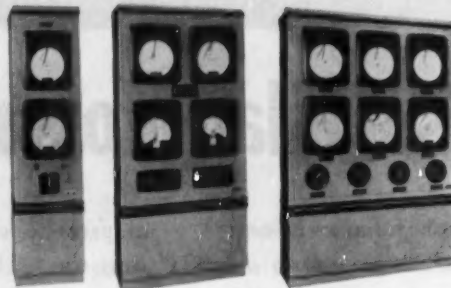
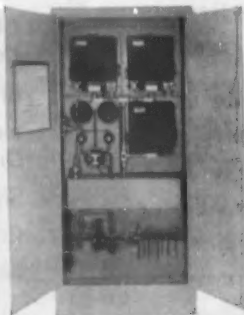
Compare this centralized Foxboro Cabinet installation of similar instrumentation, which saves time for the operator, makes his work more efficient, and gives maximum protection to the precision instruments required for his process. →



See what a difference **FOXBORO** cabinet-mounting can make!

These photos show at a glance how much more efficient and attractive your instrument installation can be if it's integrated and centralized in a Foxboro Cabinet. Not only are the instruments protected from dust and process "atmospheres", but they're conveniently grouped together for more efficient use and easier maintenance. Those "endless steps" of the operator are a thing of the past!

Foxboro will supply a cabinet (or cabinets) to house and protect any number of existing instruments and related devices. Or your order for new instruments can be shipped to you already mounted in cabinets, completely piped and wired, needing only simple power and process connections to be put into operation. Write for illustrated and informative Bulletin 413.



Foxboro Cabinets are available in three standard sizes for 2, 4, or 6 conventional-size instruments (or equivalent). For mounting more than 6 instruments, Foxboro Sectional Cabinets (with open ends) are used . . . bolted together to form desired length. End sections have one closed side to form dust-tight enclosure. Exclusive insert-type panel construction permits easy conversion when process changes so require.

THE FOXBORO COMPANY, 9910 NEPONSET AVENUE, FOXBORO, MASS., U. S. A.

FOXBORO

REG. U. S. PAT. OFF.

PROCESS CONTROL CABINETS

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

Over 750 Installations
in 22 Countries
Throughout the World

Morden-ize

THE 3 BASIC TREATMENTS IN YOUR STOCK PREPARATION

EACH STOCK requires one or more of these basic treatments.

EACH MORDEN MACHINE is engineered, standardized and proven in one of these basic treatments.

EACH MILL'S requirements suggest various applications.

OUR EXPERIENCE in assisting mills to develop simple, effective and economical stock preparation systems is available to you upon request.



Northeastern States Representatives:
ORTON CORPORATION, Fitchburg, Massachusetts

Midwestern States Representatives:
DAN B. CHAPMAN, Appleton, Wisconsin

Other Representatives in most paper-making countries.



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PORTLAND, OREGON

HANCHETT

knife grinders

for GRINDING - HOG - BARKER - PAPER TRIMMER and DOCTOR BLADES

for finest finishes



EXTRA HEAVY DUTY

MECHANICAL OR HYDRAULIC
TRANSMISSION DRIVES

speeds: 10' to 100', 30' to 150' and faster

motors: 7 1/2 h.p. to 40 h.p.

weights: 10 tons up to 40 tons

capacity: 84" to 360" and longer

drives: Mechanical or hydraulic head carriage for flat or concave bevel grinding

other models:



— medium heavy duty — capacity 32" to 184"



— normal production — capacity 32" to 108"

Announcing the NEW

MODEL

SLITTER KNIFE GRINDER

for

Top or Bottom SLITTERS

WET GRIND



- finest finishes
- extreme accuracy
- rigid construction
- capacity 3" to 24" diameter
- semi or fully automatic
- positive and accurate fixturing

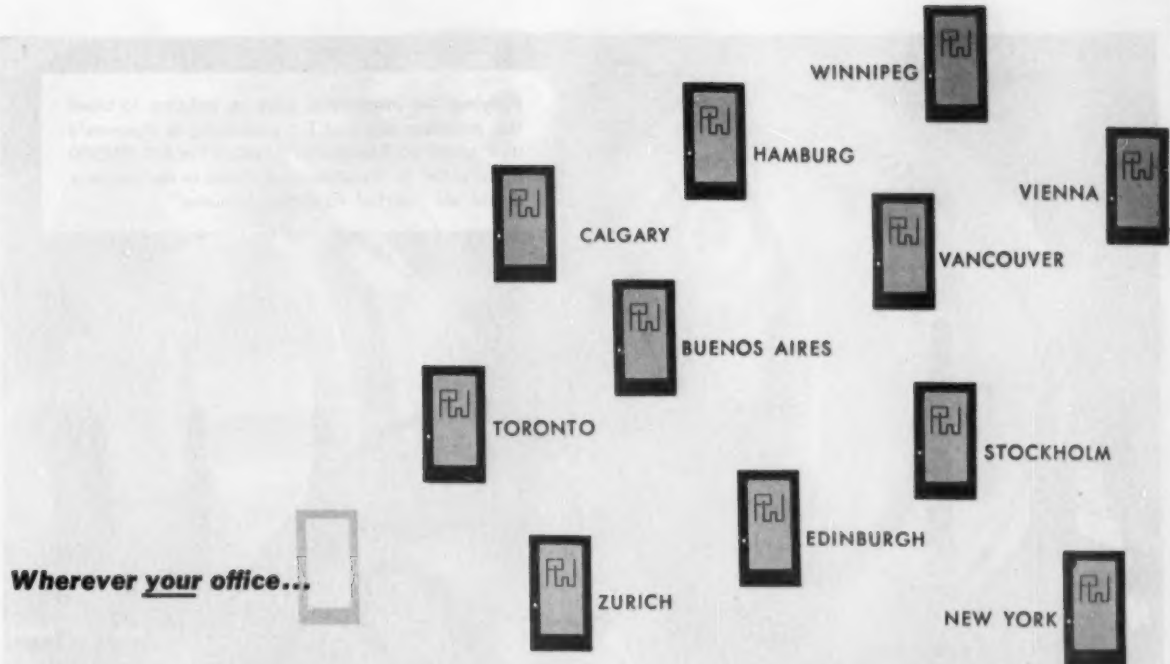
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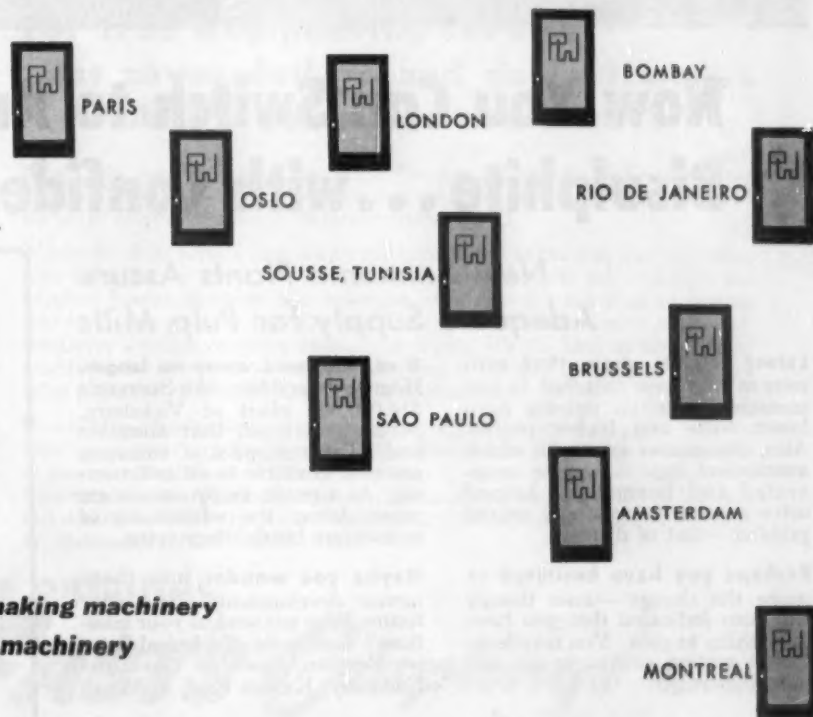
WEST COAST — Portland 1, Oregon





Wherever your office...

there's a **PARSONS & WHITTEMORE** office "next door"



for **pulp**
paper
paper-making machinery
graphic machinery

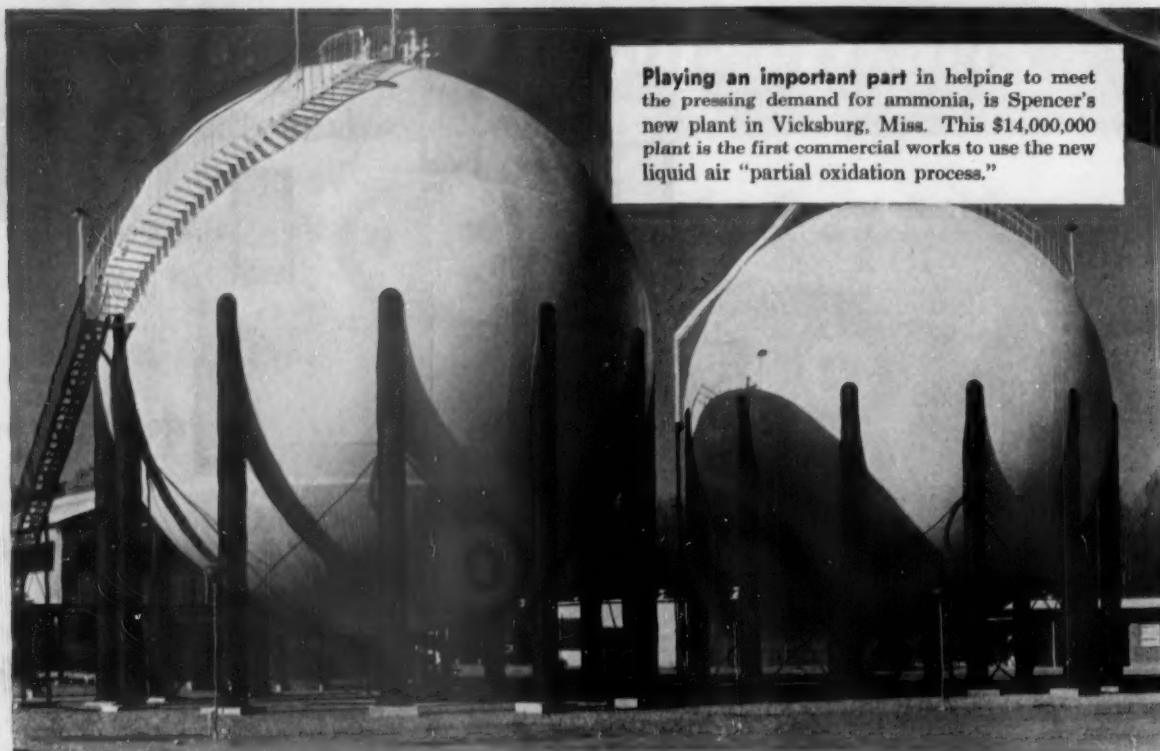
GROWING WITH THE PAPER



INDUSTRY SINCE 1883

LYDDON & CO., 35 New Bridge St., London EC4, England

PARSONS & WHITTEMORE, 250 Park Avenue, New York 17, New York



Playing an important part in helping to meet the pressing demand for ammonia, is Spencer's new plant in Vicksburg, Miss. This \$14,000,000 plant is the first commercial works to use the new liquid air "partial oxidation process."

Now You Can Switch to Ammonium Bisulphite...with Confidence

New Ammonia Plants Assure Adequate Supply for Pulp Mills

Latest reports show that mill owners who have switched to ammonium bisulphite pulping have lower costs and higher profits. Also, the greater ease with which ammonium liquors can be evaporated and burned has helped solve another increasingly urgent problem—that of disposal.

Perhaps you have hesitated to make the change—even though test runs indicated that you have everything to gain. You may have feared getting caught in an ammonia shortage.

If so, you need worry no longer. Huge new facilities, like Spencer's \$14,000,000 plant at Vicksburg, Mississippi, mean that adequate and reliable supplies of ammonia are now available to all mill owners. As a result, many owners are reconsidering the advantages of ammonium bisulphite pulping.

Maybe you wonder how these newest developments affect your future. Why not send us your questions? Just write: Technical Service Section, Spencer Chemical Company, Kansas City, 5, Mo.

Here's how you can save with ammonium bisulphite:

1. Shorter cooking time.
2. Lower cooking temperatures.
3. Higher yields of pulp.
4. Hardwoods can be pulped.
5. Operations cleaner and more uniform.



Spencer Chemical Company



America's growing name in chemicals



This Big Battery of Jordan-type Fast's Couplings has given long, trouble-free service at the Savannah, Ga. mill of the Union Bag & Paper Co.

For free engineering service that saves dollars and down-time . . . **FAST'S Couplings are FIRST!**

When you specify Fast's Couplings, you get the benefit of Koppers *free engineering service* . . . your assurance of the right coupling for any job and the right solutions to tough coupling problems!

It's the kind of service that led to the installation of the first Fast's Jordan-type Coupling in 1922 . . . a coupling that's *still on the job*, although the original Jordan machine was worn out long ago. It's the kind of service that leads one plant to say "Get the drawings and send them to Koppers" whenever a tough coupling application arises. It's the kind of service that enabled one customer to cut his coupling inventory because a Koppers sales engineer eliminated unnecessary duplications.

In addition, Fast's Couplings give you *rugged construction* . . . because their original design has been maintained without basic change or sacrifice in size or materials. And Fast's Couplings give you *lowest cost per year* . . . because they usually outlast the equipment they connect. Write today for full details to: KOPPERS COMPANY, INC., *Fast's Coupling Dept.*, 370 Scott St., Baltimore 3, Md.



THE ORIGINAL **FAST'S Couplings**

METAL PRODUCTS DIVISION • KOPPERS COMPANY, INC. • BALTIMORE, MD. This Koppers Division also supplies industry with American Hammered Industrial Piston and Sealing Rings, Koppers-Elex Electrostatic Precipitators, Aeromaster Fans and Gas Apparatus.

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KOPPERS COMPANY, INC., *Fast's Coupling Dept.*, 370 Scott St., Baltimore 3, Md.

Gentlemen: Send me a Fast's Catalog giving detailed descriptions, engineering drawings, capacity tables and photographs.

Name

Company

Address

City Zone State

WEST END **58%** SODA ASH is NON-DUSTING

...when we ship it —
...when you use it!



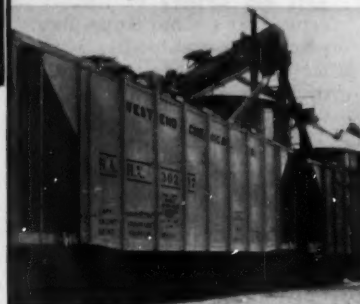
▲ West End's unique classifying system . . . a combination of air-separation and screening . . . insures complete control of dustiness in the product. Excessively coarse particles are removed. By cutting dust loss to a minimum, West End gives added economy to every industrial process.



Like this quality table salt, West End ash is uniform in particle size . . . non-dusting and free-flowing.

Orders Filled Immediately

Large stocks of soda ash are kept constantly in storage to fill all requirements promptly. West End's location provides the most rapid and economical shipment of soda ash available to users throughout the West.



West End's fleet of leased hopper cars is always ready to serve.



30 minute in-and-out loading for bulk trucks at any hour of day or night through "serve yourself" delivery.

WEST END SODA ASH IS FREE-FLOWING

Air-separation gives West End ash exceptional uniformity of particle size and density resulting in outstanding free-flowing characteristics. This uniformity tends to prevent classification and caking under normal handling and storage conditions. When put into process, West End ash is non-dusting and free-flowing.

Write for samples, prices and technical data.



Executive offices: 608 Latham Square Building, Oakland 12, California • Plant: Westend, California

PUT YOUR WHITEWATER ... IN THE CLEAR!



● Make your SAVEALL really save—

For greater operating efficiency, use Swift's NEW PROCESS Glue in your flotation saveall system. This combination recovers valuable solids economically around the clock. Easy to use, uniform, reliable.

Used in your saveall, the unique colloidal action of Swift's NEW PROCESS Glue can be quickly noticed. Clearer effluents, higher recovery mean savings in stock, water, time, labor and money that help your saveall pay dividends.

● IMPROVED BRIGHTNESS AND OPACITY— DENSER, MORE UNIFORM SHEETS—DEEPER COLORS

Swift's NEW PROCESS Glue, used to help retain valuable titanium dioxide and clays on the sheets . . . fiber and filler on the wire, is as effective as it is economical. Its unusual crystalline structure quickly absorbs water. Its high colloidal action goes to work *instantly*, even when used at low concentrations, to improve brightness and opacity . . . to aid in the production of denser, smoother and more uniform sheets and deeper colors.

Find out more about Swift's NEW PROCESS Glue. An informative bulletin outlining formulae, equipment and instructions for these and other uses is available to you without obligation. Write for details and remember...

OTHER IMPORTANT PAPER MILL USES FOR SWIFT'S NEW PROCESS GLUE

- For machine coating
- For creping of facial and toilet tissues and paper napkins
- For improved pick test

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS



Another of Swift's
Products for Industry

USE THIS COUPON FOR FURTHER INFORMATION

Swift & Company
Adhesive Products Department
Chicago 9, Illinois

G-3

Please send your latest bulletin on Swift's New Process Glue.

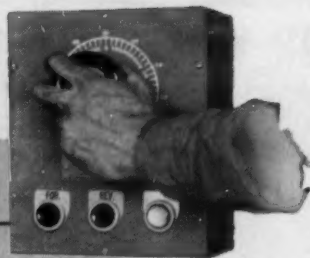
Name of Company _____

Address _____

City _____ Zone _____ State _____

Your Name and Position _____

Operator's
Control Station



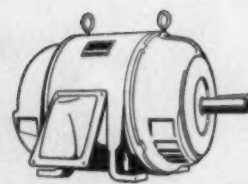
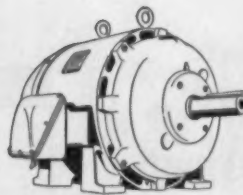
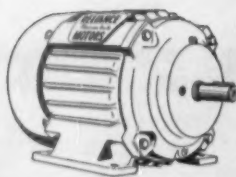
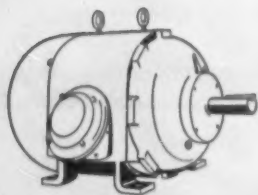
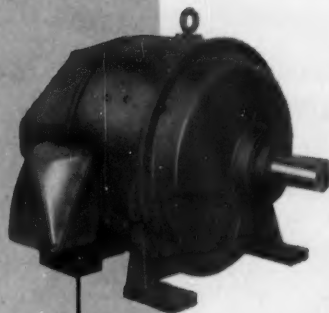
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Adjustable-Speed
Drive Motor



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**ELECTRIC AND
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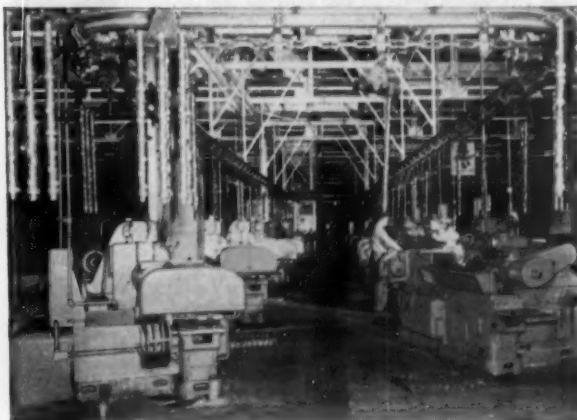
If you're looking around for ways to improve your profit ratio—then take a look at these Tools of Automation: They include Reliance motors, adjustable-speed drives, electronic controls, and applied engineering. They've made a lot of companies a lot more competitive.

They are used in the world's largest and most completely automated engine plant. And you will find them delivering out-

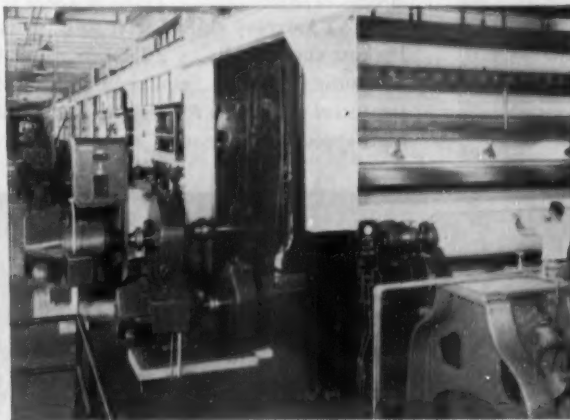
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*In a camshaft production line, Reliance V*S Drive systems provide stepless, easily adjustable speeds for fast, precision machining. Optimum cutting speeds extend tool life, reduce downtime.*



*On a high-speed newsprint machine, the Reliance V*S Drive system provides unsurpassed accuracy and dependability, maintaining precise speed relationships and correct draw adjustments between all sections.*



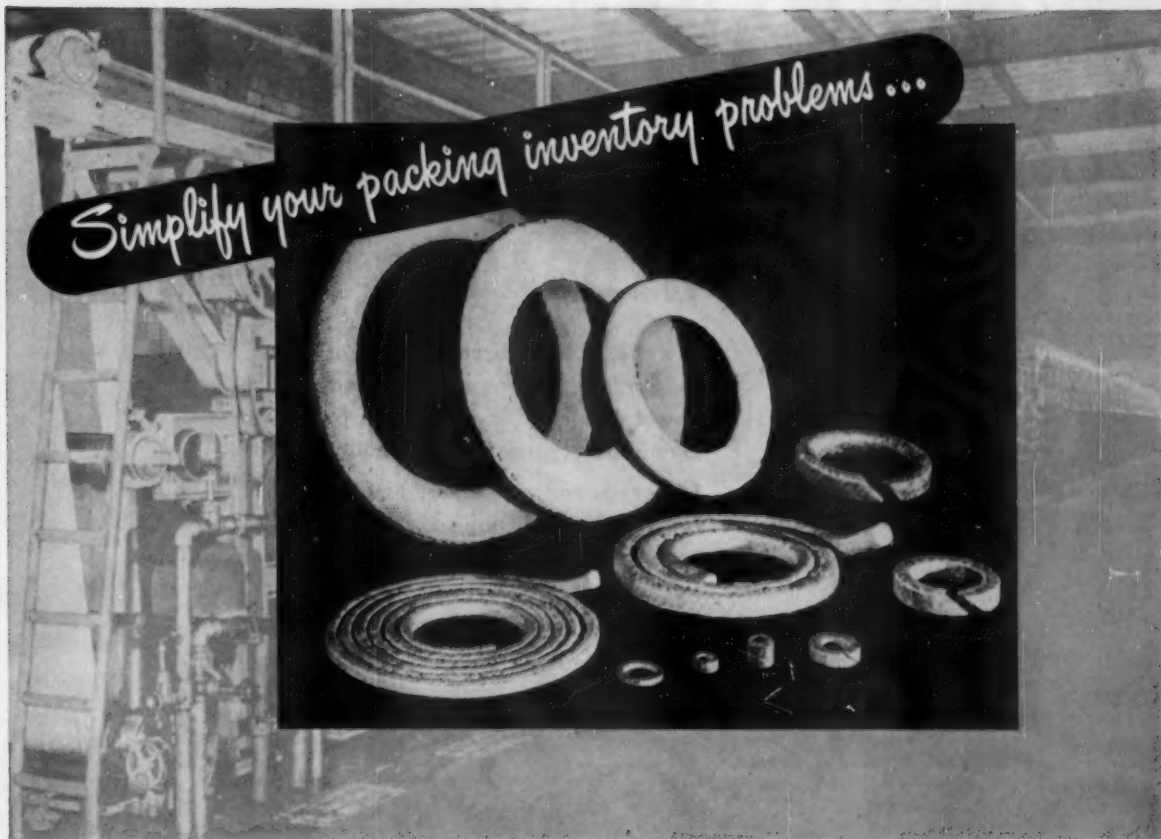
Photograph Paper Must Have Perfect Finish

— And here is a Perkins 50" Nine-Roll Web Supercalender, made for Eastman Kodak Company finishing world famous photographic printing papers at high speed . . . Operating nip pressure 2,000 pounds per lineal inch at the bottom nip . . . five (5) Farrelloy chilled iron rolls, ground to a .5 micro-inch finish . . . four (4) Perkins cotton rolls . . . Timken roller bearings . . . gravity feed lubrication . . . hydraulic pressure . . . equipped with revolving reel for wind and unwind . . . Perkins semi-steel cast frame for rigidity . . . no vibration. Designed and built for tomorrow's high speeds and pressures.

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD



Johns-Manville **CHEMPAC®** PACKING withstands active acids and alkalis

CHEMPAC is a new Johns-Manville Packing which combines the sealing action and heat-resistance of asbestos with the all-around chemical resistance of Teflon*. Because of its versatility Chempac greatly reduces the number of packing styles needed for mill equipment. Moreover, stocking and inventory present no problem because the inert ingredients of Chempac do not deteriorate.

Chempac is outstanding in service against most acids and alkalis at temperatures to 500°F. It is especially recommended for use in pumps handling calcium bisulfite cooking liquor, sulfurous acid and relief gases . . . on relief valves

on sulfite digesters . . . on valve stems exposed to chlorine, and for other equipment in service against corrosive liquids.

Chempac Packing is available in coil, spiral and ring form for rod, plunger and valve stem applications. Johns-Manville also manufactures Chempac Gaskets, made of plies of asbestos cloth treated with Teflon.

Your Johns-Manville Packing Distributor can help you select the right Chempac Packing or Gasket for your application. For complete information, write him or Johns-Manville for PK80A, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

*Trade mark for DuPont Tetrafluoroethylene resin

Pioneer in packings for over 80 years



Johns-Manville PACKINGS & GASKETS

Dominion Engineering

HYDRAULIC TURBINES

Water power has been a dominant factor in Canada's tremendous modern advance—and over half the water power developed in Canada has been harnessed by Dominion Engineering Hydraulic Turbines.

In Canada and abroad, the Francis, Propeller and Impulse Type Turbines already installed or now under construction at Dominion Engineering amount to a total capacity of nearly 10,000,000 H.P.

The facilities and experience indicated by such a record are at your service anywhere in the world.

Write for General Bulletin No. 201 on Dominion Hydraulic Turbines.

Dominion Engineering Works at Montreal, Canada



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COMPANY LIMITED

MONTREAL, CANADA



CABLE: DOMWORKS

POWELL RIVER

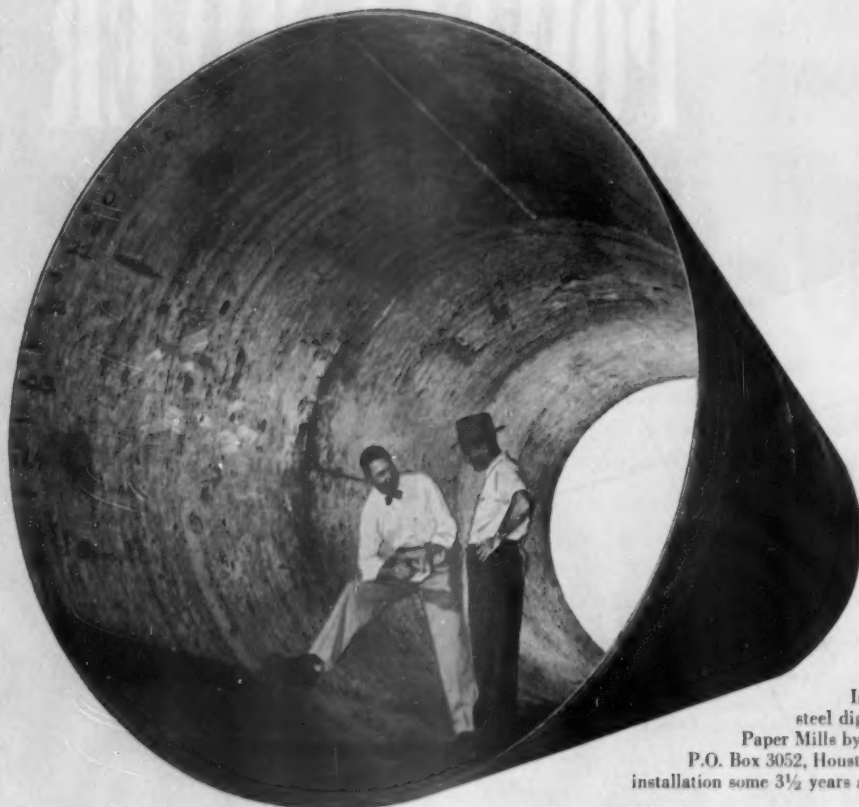
UNBLEACHED SULPHITE PULP



- ★ STRENGTH
- ★ COLOR
- ★ SERVICE
- ★ DEPENDABLE
SUPPLY

**POWELL RIVER
SALES COMPANY
LIMITED**

1204 STANDARD BUILDING • VANCOUVER, B. C.



Interior of Lukens Inconel-Clad steel digester, manufactured for Crossett Paper Mills by Wyatt Metal and Boiler Works, P.O. Box 3052, Houston 1, Texas. Since its installation some 3½ years ago, annual corrosion is nil.

Digester corrosion rate: **Inconel, nil—Carbon Steel, 62 mils**

Consider the experience of Crossett Paper Mills, Crossett, Ark.

They have used various forms of carbon steel and different alloys including Lukens Inconel-Clad for digesters.

Eight mild steel digesters show an average corrosion rate of 62 mils per year. The Inconel-Clad digester shows no measurable corrosion.

The evidence is clear, not only in the Crossett installation but in several other well known mills.

Judging by mill experience in general, Inconel shows greatly improved resistance to alkaline pulp digester corrosion as compared to other materials of construction.

If you want the latest data for *any* type of corrosion-resisting equipment for alkaline pulping processes, write our Corrosion Engineering Section. They will help you work out the solution for your specific conditions.

The INTERNATIONAL NICKEL COMPANY, Inc.
67 Wall Street New York 5, N. Y.



Nickel Alloys

**MONEL® • "K"® MONEL • "K"® MONEL
"KR"® MONEL • "S"® MONEL • INCONEL®
INCONEL "X"® • INCONEL "W"® •
INCOLOY® • NIMONIC® ALLOYS • NICKEL
LOW CARBON NICKEL • DURANICKEL®**

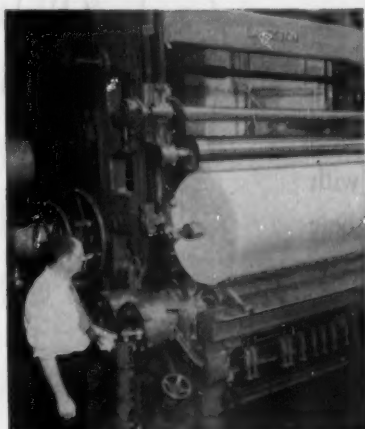
Inconel...for longer service life



A close-up look at Langston shear-cut slitters. The power-driven slitter drives the front slitter by friction. Paper is slit cleanly and accurately by shearing action of the two knives, like the opposing

blades of a pair of scissors. Note the husky construction of these cutters—your insurance of long, dependable life at today's high running speeds. It means a better return on your investment.

Clean is the word for Langston Slitters & Winders



One of the three high-speed Langston Slitters & Winders in use at Hammermill Paper Co., Erie, Pa. This is a Model DA, handling high-grade writing paper in widths to 92 in., diameters to 50 in. Operates at 3500 fpm. Uses V-belt drives throughout and is driven by a variable speed motor.

Clean cutting. They cut like scissors instead of a knife. The famous Langston shear-cut slitters cut the paper cleanly—sharpening themselves as they run. Special steels carefully machined to close tolerances assure long dependable operation with minimum maintenance.

Clean rolls. Freedom from dust in the rolls is always desirable—frequently necessary. Because dust-laden rolls can lead to considerable trouble for the ultimate user of the paper. Self-sharpening Langston Slitters shear the paper cleanly, without the fragmentation that causes dust.

Clean plant. Freedom from paper dust is an advantage in your plant and your customers' as well. The air is cleaner. Operators are happier. There's less risk of fire, less dust on machines to gum up bearings, less of a housekeeping problem.

To enjoy all of these advantages, depend on Langston Slitters & Winders. Shearing cutters are standard equipment on Langston machines without special order or extra charge. Built in sizes up to 196 in. wide and speeds to meet your specifications. For complete information, write SAMUEL M. LANGSTON CO., CAMDEN, N. J.



LANGSTON

Leadership...by design

Asten DRYER FELTS



It takes team play to make longer runs

Getting the most out of a dryer felt boils down to getting the best felt for your drying conditions. ASTEN users achieve efficient performance with minimum wear by closely cooperating with their ASTEN representative. Also participating are the people who build ASTEN quality into the felts and give them precise characteristics according to signal.



Economy in the long run

ASTEN-HILL MFG. CO.
PHILADELPHIA, PENNA.



ASTEN-HILL LIMITED
VALLEYFIELD, QUEBEC

for economical **REJECTS** refining

DRYDEN PAPER COMPANY

chooses a

SPROUT-WALDRON

36-2 REFINER

and an S-W

FEEDING SYSTEM

*Single disc design,
peripheral control ring
and rugged construction
for...*

high pulp quality
flexibility of operation
high capacity
low maintenance



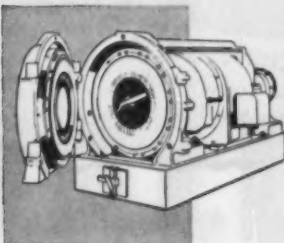
The Sprout-Waldron 450 HP Refiner at Dryden Paper Company, Ltd., Dryden, Ontario refining kraft knots and rejects. A considerable reduction in horsepower requirements is reported over previous pulping, with much superior refined pulp quality. S-W offers refiners and efficient, complete feeding, conveying and dewatering equipment in one "package" . . . with one contract . . . one responsibility.

The
SPROUT-WALDRON
refiner is the
leading producer of
high yield kraft
pulp

For more information on semi-chemical
pulping, or any other pulping application,
send for our file of technical and practical data.

Write to Sprout-Waldron & Co., Inc., 32 Logan Street, Muncy, Pa.

**S
W**



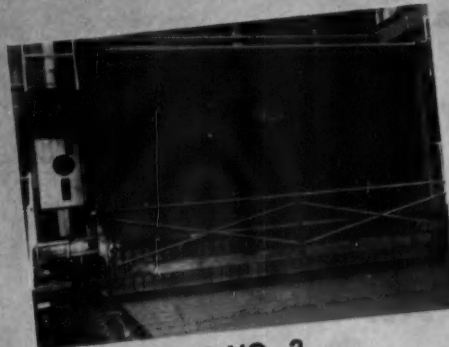
for your pulping problem—
SPROUT-WALDRON
PULP REFINERS

a success story

at **UNION BAG and PAPER
CORPORATION**
Savannah, Ga.



ON MACHINE NO. 1
Open, gravity type Valley Inlet-Headbox
installed May 1949



ON MACHINE NO. 2
Open, gravity type Valley Inlet-Headbox
installed January 1951



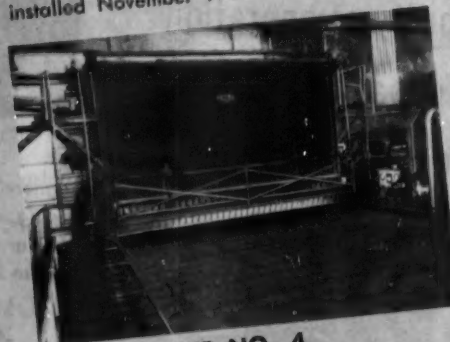
ON MACHINE NO. 3
Open, gravity type Valley Inlet-Headbox
installed May 1950



ON MACHINE NO. 5
Open, gravity type Valley Inlet-Headbox
installed November 1950



ON MACHINE NO. 4
Pressure Secondary Valley Inlet
installed October 1951



ON MACHINE NO. 4
Gravity-type Primary Valley Inlet
installed October 1951



ON MACHINE NO. 6

This new No. 6 machine is equipped with Valley Pressure Primary Inlet. Started up May 1953. Opinion of mill managers is "No. 6 performance is outstanding!"

7 VALLEY INLETS on 6 PAPER MACHINES

*Present capacity
1800 tons daily

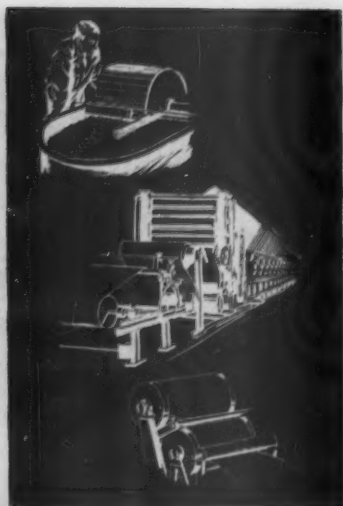
It was in May 1948 that Valley was called to Savannah to discuss stock entrance equipment with the Union Bag and Paper Corporation — world's largest paper mill.*

In May the following year, an open, gravity type Valley Inlet-Headbox combination was installed on No. 1 machine. Since that time *all six* of Union's giant 236" machines have been equipped with Valley Inlets — including a seventh secondary installation on machine No. 4.

We believe that this record of seven Valley Inlets installed in *one mill* within a period of four years *speaks for itself*. It suggests that *you too* may profit from a conference with our engineers regarding the possibility of improving the performance of *your own* stock entrance equipment. Your inquiry requesting information or an interview will be given prompt attention.

VALLEY IRON WORKS COMPANY
Appleton, Wisconsin

VALLEY INLETS



HERCULES® STARCH meets all specifications for...

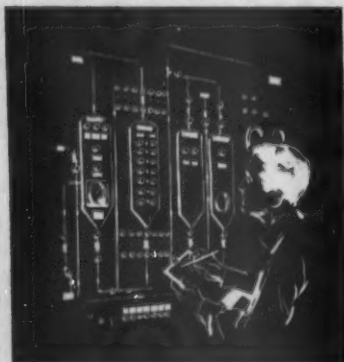
Beater Additive! Hercules Starch is especially effective in improving the retention and effectiveness of the rosin size.

Surface Sizing! Hercules Starch is a natural for this use. It imparts an improved printing surface with a better "pick test", and higher Mullen Factor.

Paper Coating! Hercules Starches make clear, more permanent films, and have greater uniformity from batch to batch. *We modify these starches to suit any coating equipment.*

Calender Sizing! Hercules Starch is highly recommended for surface improvement. It is miscible with wax size and yields a paper board suitable for printing with gloss ink.

HERCULES STARCH FOR QUALITY PAPER



Controlled manufacture...

Hercules is manufactured by a newly perfected mechanical process. This new technique reduces human error and provides absolute control of product quality. Hercules is the **ONLY** starch produced by this method. Hercules is especially refined to help speed production, reduce "Down Time". It imparts a desirable snap and rattle to paper. In board manufacture Hercules starches give you a higher quality board.



Quick delivery...

The particular Hercules Starch you want is yours when you want it, in amounts required by your production schedules.

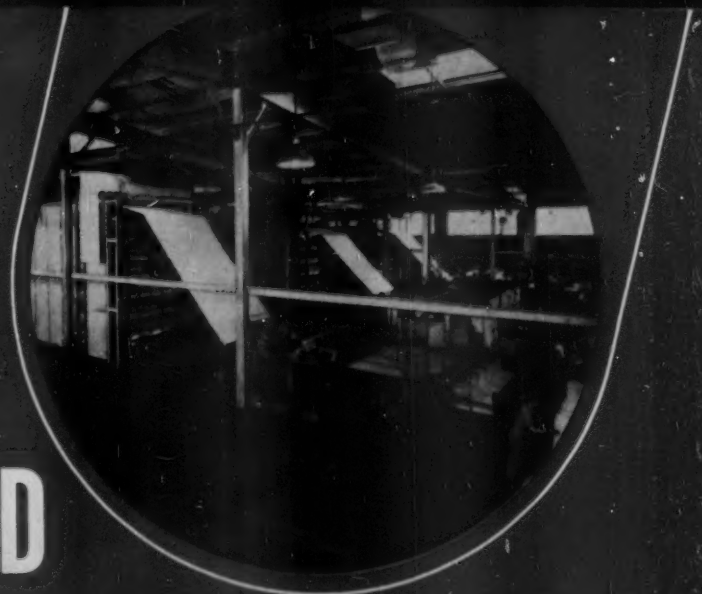
Service to the Industry...

Take advantage of our free technological service. Our field and laboratory experts welcome an opportunity to help you solve your problems. Please write today.

Corn Products Refining Company
17 Battery Place, New York 4, N. Y.



*PUGET PULP—the whitest, cleanest, bleached sulphite pulp that we can make is produced particularly for the market. To assure converting mills of top quality, Puget management is always testing new processes, always alert to improved methods, always ready to install new designs in equipment. Gear your operations to **PUGET PULP**.*



PUGET SOUND

PULP AND TIMBER COMPANY

BELLINGHAM • WASHINGTON

NEW DISTINCTIVE PACKAGING

Huyck papermakers' felts are baled in kraft paper and heavy burlap, assuring clean, safe delivery.

Textile compressive shrinkage blankets are shipped in sturdy, easily stored fibre board drums. The use of a paper product container for shipping felt is a recent development and another *Huyck First*.

Now, as a further convenience, each Huyck package is clearly labeled in color, for immediate identification, to keep your stand-by Huyck felts ready for instant use.

Consider service carefully when you buy felts: it must always be complete and dependable. As the Huyck service record proves, Huyck felts — with Huyck service — mean better production and lower costs for you.

Now being issued — Vol. II HUYCK FELT BULLETINS. Where shall we send your copies?

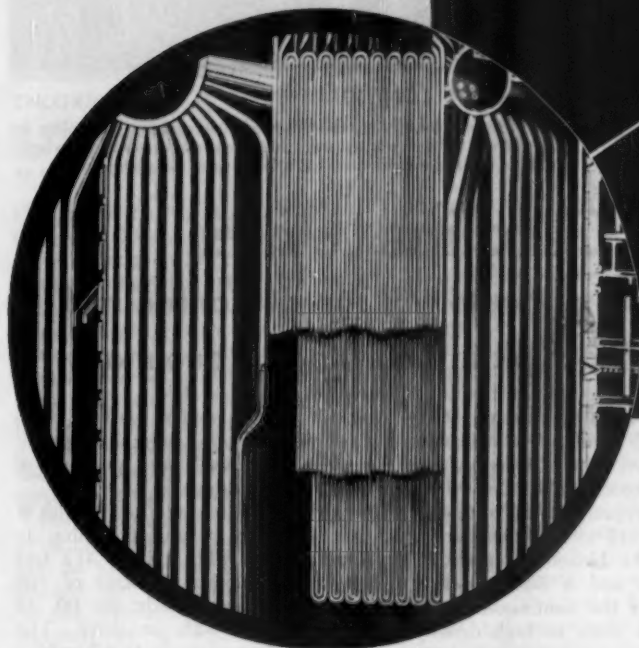
HUYCK FELTS
first in quality...
first in service

F. C. HUYCK & SONS ESTABLISHED 1870 • RENSSELAER, N.Y.

Huyck Felts
FIRST IN QUALITY - FIRST IN SERVICE
F. C. HUYCK & SONS, RENSSELAER, N.Y.
DO NOT KNEAD - DO NOT GRAB

No Slag

foothold here



As shown above, the entire superheater of the C-E Recovery Unit is located directly above the furnace. Thus chemical ash deposits, as they are dislodged from the superheater surfaces, fall directly to the furnace hearth.

Accumulation of slag on superheater tubes means trouble in any boiler. In a chemical recovery unit, fired with black liquor having a high percentage of low fusion temperature ash, slag accumulation can be particularly troublesome. With the conventional type superheater slag builds up and anchors itself around individual tubes, insulates them against heat transfer, blocks gas passage, increases draft loss and necessitates mechanical and manual cleaning.

The panel type superheater, found only on the C-E Recovery Unit, allows slag no such foothold. Each element — or panel — of the superheater consists of a solid wall of tangent tubes with wide spacing between

panels. The space between individual tubes has been eliminated, so that any slag accumulation is confined to the wall-like surface of the elements where much of it frees itself and the rest is easily dislodged.

This panel construction channels gas flow smoothly over the superheater surfaces and slag formation is, therefore, reduced to a minimum. Furthermore, since slag cannot key-up between tubes, the action of the soot blowers is much more effective.

Developed by, and exclusive with C-E, the panel type superheater represents another significant achievement which has resulted from Combustion's consistent efforts "to make good equipment better."



COMBUSTION ENGINEERING

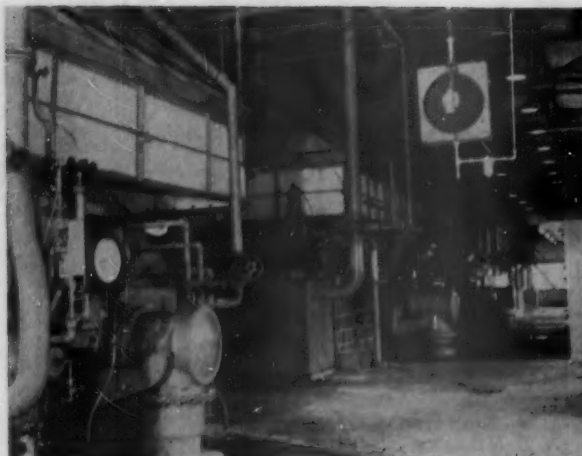
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B-775

BOILERS, FUEL BURNING & RELATED EQUIPMENT; PULVERIZERS, AIR SEPARATORS & FLASH DRYING SYSTEMS; PRESSURE VESSELS; AUTOMATIC WATER HEATERS; SOIL PIPE

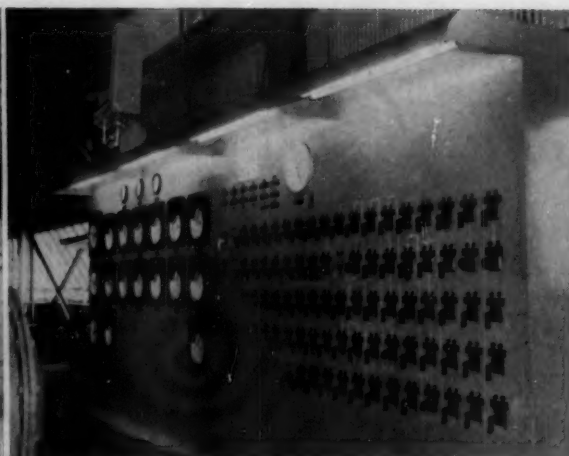
PULP & PAPER — October 1954

65



CANTON'S NEW BLEACH PLANT

Operating floor with No. 2 unbleached stock thickener at left. Then Oliver-United washers for first three bleaching stages; then one of two white stock thickeners. Tile vats by Stebbins.



ONE-MAN CONTROLS

View of panel carrying the 17 Foxboro recorder-controller instruments. Motor control push buttons provide a system whereby one operator runs the entire hardwood bleach plant.

"Preview" of New Carolina Units

What Southern Superintendents will see at Canton mill includes a hardwood bleach plant operated by one man

● When superintendents from Southern pulp and paper mills visit Champion Paper & Fibre Co.'s plant at nearby Canton, as part of their annual meeting Oct. 13-15 in Asheville, N. C., they will, as usual, see some new things that have been added since their last session in the Smoky Mountains resort.

A one-man operated hardwood bleaching plant, started up in Sept. 1953, is to be included. This unit, with its four 50-ft. bleaching towers, is equipped with 17 Foxboro recorder-controller instruments set in two main panels with accompanying motor switches with on and off lights. On this board the related function motors are indicated by painted lines. Thus, when a horn blowing calls the operator to the board with its flashing light he can see at a glance which motor has kicked out and what others are involved.

Unbleached stock proceeds through two thickeners in parallel and then to the 4-stage bleaching system, consisting of chlorination, caustic extraction, and two hypochlorite stages. Chlorination is low density, while caustic and first hypo stages are high density.

The second hypo stage is divided with high-density (9% to 10%) stock being put through the tower and then through a series of five low density tanks at 2% to 3% consistency. After

neutralization and final washing, stock is put through Bauer Bros. Cleaners (formerly called Centri-Cleaners), and then two thickeners in parallel. Afterwards it is dropped directly to a storage tower at 11% to 12% consistency. Capacity of the bleach plant is 250 tons per day, and a 5-hour period is required for the continuous process from stock entry to high density storage.

Stock is drawn from the bottom of the storage tower as furnish to either the pulp drying machine or the wet lap machine. Some of this pulp is used in the Canton paper mill, the balance being shipped to the Ohio Division and sold on the open market.

All washers following bleach stages were furnished by Oliver-United Filter Co., the rubber covered agitator for the chlorination tower by Improved Machinery, Inc., and tile vats and tower linings by Stebbins Engineering & Mfg. Co.

The new bleach plant is an aftermath of the company's change some time ago to hardwood and pine pulpwood exclusively, and abandonment of the soda process on hardwoods in favor of sulfate for both types of wood.

Forty million gallons of water are used daily by the Carolina Division, its source the Pigeon River, which rises in the Pisgah National Forest, supplemented by Lake Logan re-

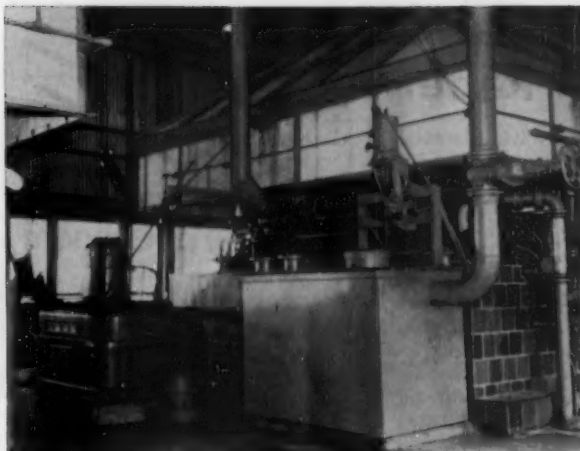
servoir of 600 million gallons capacity. Needs of other users during summer is recognized in a program of thriftiness in water use.

Operation of a new F. L. Smidth & Co. lime kiln began at Canton in March, 1954. This unit is 312 feet long, with interior diameter of 10% feet. It has four speeds: 80, 60, 40 and 20 rpm, with ac drive. The sludge filter was made to Champion specifications. The kiln has a cyclone scrubber, a chain section, and four trunion supports. Its rated capacity is 200 tons per day.

Gas used in firing the kiln is manufactured by Wellman producers from coal. Two are normally used on No. 5 and one on No. 4 kiln, also a Smidth unit measuring 317 ft. with an 8 ft. 10 in. i.d. The gas makers can be used singly or in combination on either of the two kilns. The new kiln is listed as No. 5, but it displaced three old units.

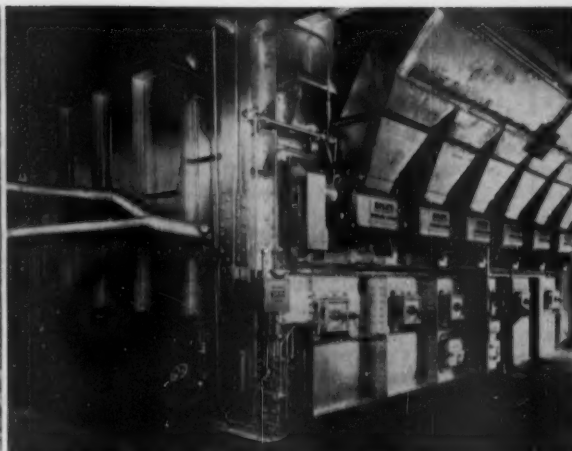
Control of the new kiln is completely automatic with recorder-controller instruments by Foxboro. The draft indicator came from Republic Flow Meter Co.

Interesting in efficient handling of variable production of fuel from barking drums is a new Riley Stoker Corp. bark burning boiler that started up in Feb. 1954, displacing four old Sterling units in the original powerhouse. Rated at 200M lb./hr., 400 psi, 700



CHLORINATION IS FIRST STAGE

At left is power end of Improved Machinery, Inc., rubber covered agitator for low density chlorinization tower at Canton. At right is Oliver washer.



REPLACED FOUR OLD BOILERS

View of Riley bark burning boiler that accepts bark from the barkers in varying quantities without requiring preparation or storage.

F., this new facility accomplishes four things: (1) it burns bark on a spreader stoker without its having been passed through a hog, i.e., without preparation; (2) as a spreader stoker unit, it accepts bark in any quantity as it comes, i.e. at an uncontrolled rate without the use of a fuel bin; (3) it burns bark and/or coal in any proportions from 100% either way together in the same furnace; and (4) it does all these three things under completely automatic control.

Bark is brought to the boiler house by a belt conveyor and upon reaching an upper level is turned by a damper onto a short feeding belt. At the belt end, it is continuously weighed by a Builders-Providence "Conveyoflo." Here bark drops into a hopper to a revolving reverse partial conical shield having a bottom opening at one edge. As this shield revolves, bark is dropped into six equal-sized duct openings to ducts which spiral downward, terminating in rectangular feeding openings set through the boiler casing about 12 ft. above the grate. As the bark enters the furnace space it encounters an inclined splatter plate the angle of which is controlled by a hand set wheel. Bark is thrown out and upward by this plate and is caught by air jets and distributed across the grates. Any tramp iron is removed when the grates are cleaned.

Some flash suspension burning and some drying is effected as bark passes through furnace gasses. Coal is introduced 3½ ft. above the grates. Specifications call for burning an average of 50M lb./hr. of bark continuously, with one hour's peak at the rate of 90M lb./hr.

A control is set and as volume of bark fluctuates, the coal needed to

maintain combustion is admitted. Coal may be burned 100% or it may be shut off entirely.

Bark has a tendency to be carried across the furnace and lie heavier against the back of the grate, whereas coal experience is in reverse. The combination is considered ideal.

An added value to the fuel chart has been in providing the wood room with a record of its own operation. Other benefits from the boiler operation are dust collection and reinjection into the furnace with accompanying betterment of atmospheric conditions in Canton.

Furnace grate space measures 17 by 25 ft. The boiler has water tube walls and can absorb up to 85% of heat available from the fuel.

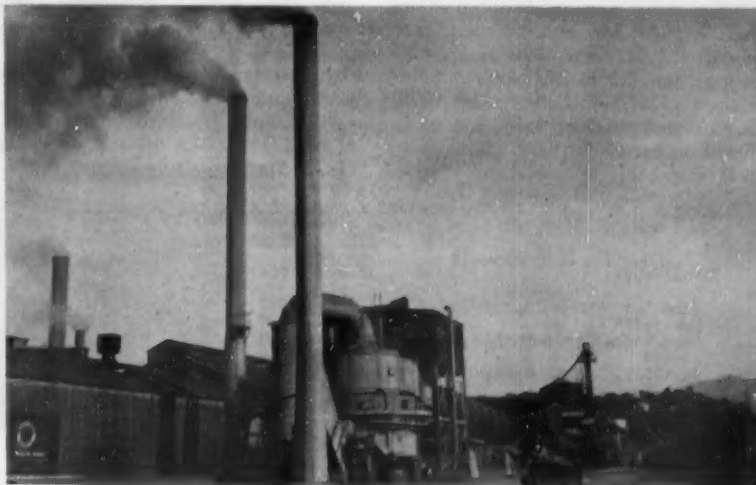
Another improvement completed in

Dec., 1953, is a 40 ft. diameter 376,000 gal. capacity black liquor storage (surge) tank ahead of evaporators.

Additions to be Seen

The record shows Champion was accredited with \$5,384,128 in certification for improvement and in July, 1952 was granted an allotment of \$4,345,000 in critical materials with which to make certain installations for a shift from chestnut to hardwood pulpwood, and to expand capacity for producing this type of pulp. Also granted was \$1,794,000 for a pilot plant for producing hardwood pulp by a semi-chemical process.

In the paper mill, there is a new Allis Chalmers' control for the machine.



LIME KILN HAS FOUR SPEEDS

View of new No. 5 lime kiln, 312 ft. long, furnished by F. L. Smidth & Co., automatically controlled by Foxboro instrumentation.

Predicts An Amazing Increase In Demands for Pulp and Paper

• United States paper and paperboard consumption of 52.9 million tons by 1975 (now it is about 31 million tons annually) is forecast in one of the most comprehensive analyses of future demand for all forest products ever compiled. This is the Stanford Research Institute report made public Sept. 30 by Weyerhaeuser Timber Co., sponsors of the study. U. S. production of paper and paperboard will be 46.6 million tons, almost twice present output, the report states!

Even the eternal optimists in this industry will be blinking their eyes for some time to come when they've scanned the report and studied its implications. Weyerhaeuser, biggest private owner of timber in industry, wanted to know the facts about what the future held for its variety of wood products and for forest industries at large. The study is impartial, based partly on United States' future needs and taking into account competition between paperboard and wood, rayon pulp and nylon, etc., and technological advances.

(Incidentally, readers will find an interesting background on pages 113-134 in Pulp & Paper's 1954 World Review Number, graphically and statistically showing how U. S. and Canadian industries have produced in the last 75 years.)

Findings of the Stanford group were condensed by Institute staff experts. Their simplified version follows. **Paper consumption**—"Paper consumption (not including paperboard) as measured by new supply (production plus imports, less exports), increased about 93% between 1929 and 1953, rising from 9.1 to 17.6 million tons. Consumption of all papers by 1975 is estimated at about 28 million tons, based on correlation with population, real disposable income, and trend;

this checks reassuringly with the total estimates for each of the paper types."

Paperboard consumption—"Consumption of all grades . . . has risen rapidly in the past quarter-century from about 4.3 million tons in 1929 to about 13.8 million tons in 1953. A continued increase is expected but at a lesser rate. It is unlikely paperboard can find new uses as potentially large as shipping containers and packaging materials. A slower rate of growth, therefore, is reflected in an estimated future consumption of 24.9 million tons of paperboard in 1975."

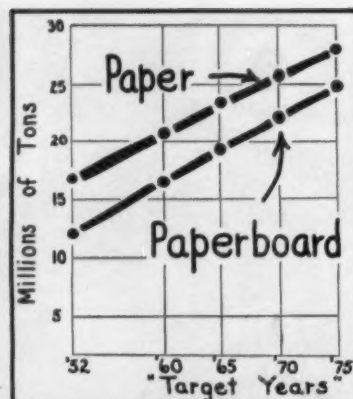
Imports—"In 1952, net imports totalled 4.6 million tons, with newsprint imports of 5 million tons partially offset by net exports of other grades. Heavy imports of newsprint are expected to continue; this country will remain a net importer of paper and paperboard. Net imports are estimated to reach about 6.3 million tons by 1975."

Production—"Total domestic production of paper and paperboard is expected almost to double, from 24.4 million tons in 1952 to 46.6 million tons by 1975. A summary of this production, by major paper and paperboard categories, is shown below.

Other Woodpulp Products—The report states that 800,000 tons of woodpulp used in non-paper products in 1952, 61% went in rayon and acetate; 39% in cellophane, lacquers, photographic film, plastics and explosives. Indicated trend is a declining rate of growth for rayon and acetate in textiles. Total non-paper uses of woodpulp are expected to increase from 800,000 tons in 1952 to about 1,800,000 by 1975.

It is estimated that in 1975 total consumption of woodpulp in the U. S. will be slightly more than double that of 1952 (18 vs 36.1 millions tons).

Other Findings—"Probably the most



STANFORD RESEARCH INSTITUTE predicts a phenomenal total United States Paper and Paperboard Consumption of 52,900,000 tons by 1975. This chart by PULP & PAPER shows consumption lines for Paper only (separately) and Paperboard.

important change anticipated is the increased use of semi-chemical pulps in the furnish of both paper and paperboard."

"The proportion of bleached and semi-bleached sulfate pulp in the white pulp classification, which includes also sulfite and soda, is expected to rise steadily."

"Little, if any, further expansion in capacity of sulfite and soda pulps is foreseen."

By 1975 every region will have seen its pulpwood supply go up considerably from 1952 levels. East and West will increase moderately (2.8 and 4.7) while the South is due for a whopping 15.5 million cords (roughwood basis) increase.

Use of hardwood will be increased greatly.

Sawmills as a source of pulp chips will become more important; East will get 11% of its supply from sawmills by 1975.

What H & W-Scott Merger Will Mean

A merger of Hollingsworth & Whitney Co. with Scott Paper Co., long rumored, is now a reality and it probably will mean expansion of H & W mills in Maine and Alabama to make Scott brand products. H & W lines, which brought \$22.5 millions in sales for 6 months of 1954, will be continued.

The merger ends Scott's long hunt for a South Central or Gulf coast mill site. Scott shares are split 2 for 1, after which the merger was approved on basis of 14 Scott common to 10 H & W common.

This merger followed shortly after Scott acquired Detroit Sulphite Pulp & Paper Co. in Michigan and Westminster Paper Co. in British Columbia.

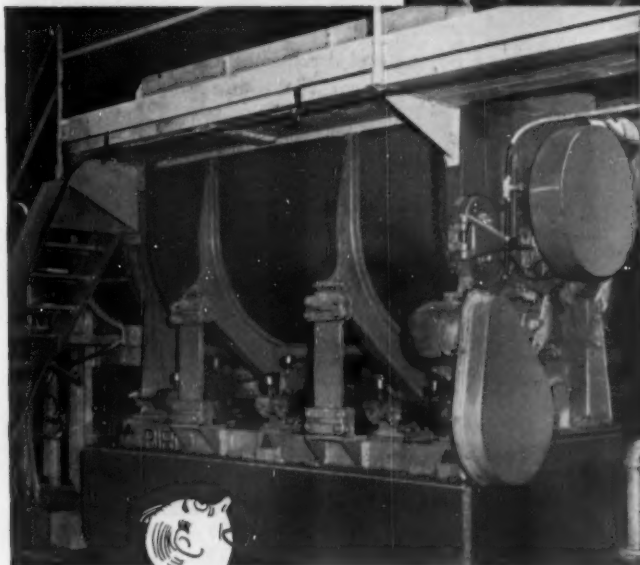
Grade	Domestic Production of Paper and Paperboard (Millions of Tons)				
	1952	1960	1965	1970	1975
Total Paper	10.9	13.6	15.4	17.1	19.0
Fine	1.3	1.6	1.8	2.0	2.3
Newsprint	1.1	1.3	1.5	1.6	1.7
Book and other printing	3.4	4.2	4.8	5.4	6.0
Coarse	3.2	3.8	4.2	4.6	5.0
Sanitary, tissue & other	1.9	2.7	3.1	3.5	4.0
Total Paperboard	10.9	14.5	16.8	19.0	21.3
Containerboard	5.8	7.4	8.5	9.6	10.7
Boxboard and other	5.1	7.1	8.3	9.4	10.6
Building Paper - Paperboard	2.6	3.9	4.7	5.5	6.3
Building paper	1.3	1.8	2.1	2.4	2.7
Building board	1.3	2.1	2.6	3.1	3.6
Totals.....	24.4	32.0	36.9	41.6	46.6

WHAT IS IT YOU WANT IN *Your* PAPER SCREENS?

Maximum Screening
Capacity?

Maximum Dirt
Removal Efficiency?

Or a Balanced
Combination of Capacity
and Efficiency?



Whatever your particular requirements, BIRD SCREENS meet them the one best way. It's simply a matter of screen plate slot size.

When you compare Bird Screen performance with that of any other screen, consistency handled and size of screen slots being equal, you will find that you simply cannot beat the Bird Screen for capacity or for dirt removal efficiency.

That is why better than ninety per cent of all the paper screened in North America passes through Bird Screens.

BIRD MACHINE CO.
South Walpole, Massachusetts



ALASKA'S FIRST



INSET (Above) — Bleach plant and screen room with steel liquor tanks in foreground



RIGHT — A recent view of Ketchikan Pulp Co.'s new ultramodern mill at Ward Cove, Ketchikan, Alaska

- After many years of hoping and dreaming, planning and working, Alaska now has its first permanent, year-round industry.
- Ketchikan Pulp Co.'s new plant combines modern design, finest materials and equipment, with the latest in modern, efficient construction technique.
- Howard S. Wright & Co. and Guy F. Atkinson Co. joined forces as Ward Cove Builders to perform all construction work, including the dam and pipeline supplying water to the mill, site preparation and excavation, erection of the plant buildings and dock, and installation of all process equipment.

WARD COVE BUILDERS

General Contractors

Howard S. Wright & Co.
Seattle

Guy F. Atkinson Co.
Seattle and San Francisco

138 Western Gear Drives

selected for new Ketchikan mill



Aerial view of new Ketchikan Pulp Company mill at Ketchikan, Alaska. Inset shows close-up of one of 138 Western Gear drives used.

WHY? ... because Western Gear drives have established an unequalled reputation for superior performance per dollar of cost. Its remote location forced the new Ketchikan Pulp Company mill, combined effort of the Puget Sound Pulp & Timber Company and the American Viscose Company, to insist on drives designed for automatic operation wherever possible and backed by utmost dependability. Specifications for equipment in the mill demanded latest in design with a proven reputation for efficiency and long life. All the drives requiring reducers from 2 HP to 1250 HP were supplied by Western Gear Works, from the log haul drives to the finishing room and in the yards and on the docks. In addition, Western Gear supplied what is believed to be the first positive drive two-speed log haul with remote pneumatic shifting control.

In the past four decades, Western Gear Works reducers and gear drives have become standard equipment in the mills of the Northwest and more Western Gear speed reducers are in use in these lumber, pulp and paper mills than all other makes combined.

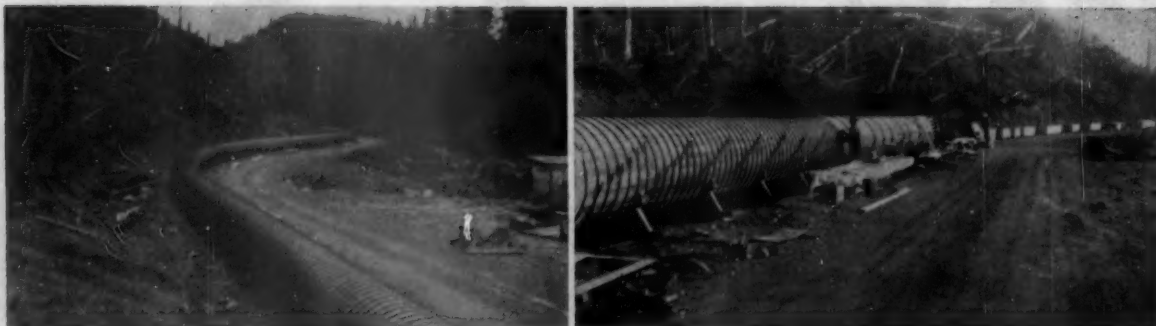
Thos. J. Bannan, President

PLANTS AT LYNWOOD, PASADENA, BELMONT, SAN FRANCISCO (CALIF.)
SEATTLE AND HOUSTON — REPRESENTATIVES IN PRINCIPAL CITIES



For information on how to solve your mill problems, write Western Gear Works, 417 Ninth Avenue South, Seattle 4, Washington.





Main water supply line for Ketchikan Pulp Company, Ward Cove, Alaska. Brooks wood stave pipe 5'0" inside diameter and 2.4 miles long. View at right shows assembling operations of wood pipe for Ketchikan mill.

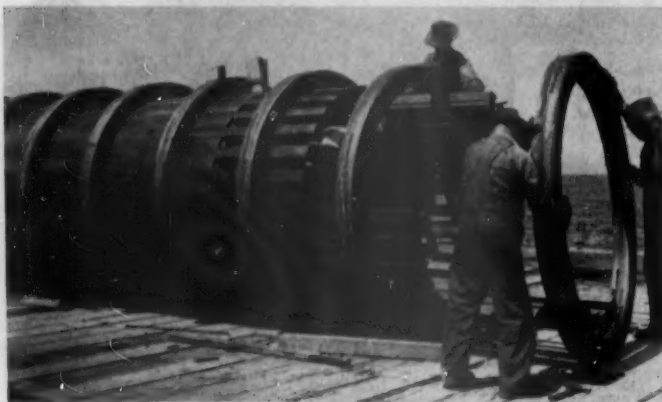
Wood Pipe Delivers Pure Water at Ketchikan

Wood pipe is preferred for projects of this kind because it delivers the water with its natural purity unchanged—no rust or corrosion.

This wood pipe line is a permanent installation because all lumber is fortified against decay by the Brooks hot-and-cold Pentachlorophenol wood treating process.

Wood pipe is not easily affected by freezing because of the excellent insulation provided by the thick wood staves and the natural flexibility of wood pipe.

This wood pipe is a highly economical installation as the pipe is shipped to the job knocked-down, thus making a great saving in transportation and handling costs.



Building 60" Brooks Lock-Stave Pipe for Outfall Sewer
(Patents Pending)

An all wood pipe suitable for pressure use. Staves are splined and croze locked and spliced end to end with wood and the supporting wood collar rings are glue laminated and wood pinned.

This wood pipe is a permanent installation and requires no cleaning and painting on the inside to prevent rust and corrosion.

Wood pipe is built to the natural curvature of the terrain, thus eliminating the use of special angle fittings and adding to the favorable flow characteristics and appearance of the line.

BROOKS LUMBER COMPANY

BELLINGHAM, WASH.

Engineers and Manufacturers

WOOD TANKS

WOOD PIPE

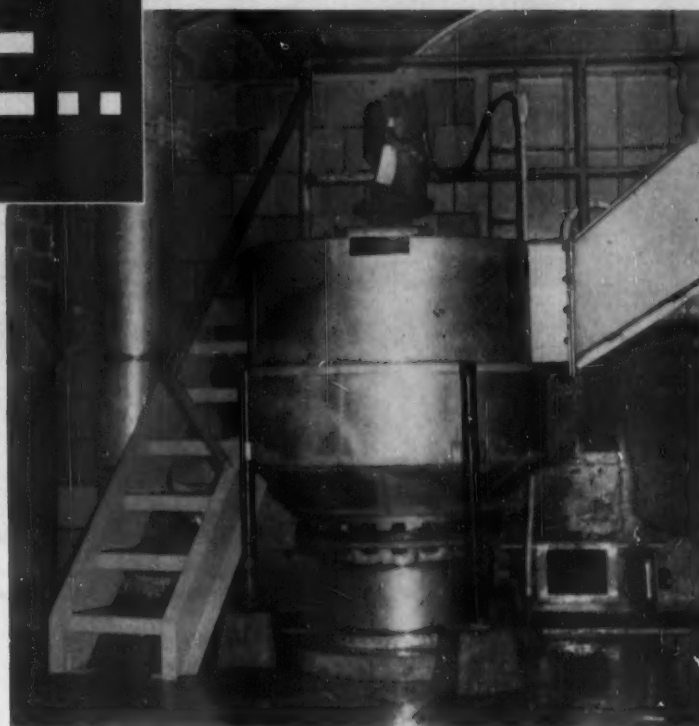
CROSSARMS

LUMBER

Our Complete Lumber Manufacturing and Treating Facilities are at Your Service

FIRST CHOICE..

IN KETCHIKAN AND IN MANY OTHER NEW MILLS!



PAN-TYPE REGULATOR INSTALLED AFTER HIGH DENSITY DECKER

DeZURIK AUTOMATIC- RECORDING CONSISTENCY REGULATORS

In this modern Ketchikan Pulp Company mill, the first pulp mill in Alaska, DeZURIK AUTOMATIC-RECORDING CONSISTENCY REGULATORS were "FIRST CHOICE" . . . as they are in so many modern mills throughout the country. Their completely automatic operation delivers uniform stock without interruption . . . without trouble . . . without attention! Full 24-hour recording indicates both incoming and outgoing consistencies, with never more than plus or minus .01% variation! Spattering stock will not interfere with the modern automatic instrumentation control of this highly responsive mechanism. There is no fouling, corrosion or cleaning . . . and a single knob adjusts the entire system. DeZURIK CONSISTENCY REGULATORS are available in three basic types to fit any installation. A Closed Stock System for Paper Machine Supply is also available. Write for details.

OTHER DeZURIK MILL EQUIPMENT:

DeZurik Easy-Operating Plug Valves; DeZurik Showers; DeZurik Pipe Line Strainers; DeZurik Cleanable Trim Squirts; DeZurik Automatic Flowmeter and Liquid Sampling Instruments.

DeZURIK SHOWER COMPANY
SARTELL, MINNESOTA





TWO FLAGS ARE RAISED OVER NEW MILL

The Stars and Stripes and Alaska's Territorial flag were un-

furled at dedication of Alaska mill, with U. S. and Alaska officials and many leaders of business and finance present.

The Ketchikan Story Begins Here:

Green Gold Brings to Alaska a New Era

"With the advent of Burning Daylight, the whole place became suddenly brighter and cheerier. The bar-keepers were active. Voices were raised. Somebody laughed . . . the waltz-time perceptibly quickened, and the dancers, catching the contagion, began to whirl about . . ."—Jack London.

These words by the greatest writer of Alaska stories and one of America's best writers of all time, were applied to an unusual man, with an odd nickname. They describe equally well the effect a new industry has had on the spirit of Southeast Alaska.

One of the most modern chemical pulp mills in this industry's history is

Alaskan totem pole—photo courtesy Canadian National Railways.

operating at a good rate of efficiency to day in one of the most remote areas of its construction.

Relatively few persons in this industry will have a chance to see it first hand.

But for all those others PULP & PAPER presents in this issue the complete story of Ketchikan Pulp Co. This issue is replete with pictures of the mill, as well as descriptions of all the operations, of its organization and of its construction.

PULP & PAPER spent a week in the Northland, gathering the material for this exclusive presentation. For the many who may never see this most modern mill, the scenes and the story are brought to them in these pages. For those few who have seen it and those who worked months and

years to create it, here is the record to preserve their memories.

American industry—in its century of amazing progress—made one of the biggest leaps it ever made, from a mileage standpoint at least, when this massive cellulose plant was hewn out of the great Tongass forest. It is Alaska's first year-around industry. It is seen as a mighty stride toward Alaskan statehood.

It took courage and faith to build this mill—if that is not so, then why did the government offers of low priced wood, with no carrying charges, go begging over 30 years?

Green Gold is now being mined in Alaska, bringing more returns, indirectly and directly, to many more people, than the historic Gold Rush of nearly 60 years ago ever did. This



VIEWED FROM ACROSS WARD COVE

Alaska's new pulp mill, from across the little cove on Tongass

Narrows. Picture taken from roadway to Ketchikan. Mill dwarfs the big ocean-going liner at its dock.

That Outshines Even Its Glamorous Past

mill has cost over seven times what Secretary Seward of President Johnson's cabinet paid the Russians for all of Alaska—some called it Seward's Folly—\$7,200,000 for a territory the Russians had already exploited of its riches in furs. Even Alaska's famous fishing industry, now declined to half its former \$100,000,000 annual return, brings a total annual income now which is less than the \$52,500,000 invested in the new pulp mill.

Fish, furs and mining—the three “get-rich-quick” lures of an Alaska of the past—are all declining. In their place—steady, skilled jobs in a “growth” industry, with steady returns for stockholders, shipping enterprises, suppliers of many kinds, and the butchers, bakers and candlestick makers of Ketchikan, as well.

WHAT'S NEWS ABOUT KETCHIKAN MILL

1. Only second mill in world using MgO recovery process, with many new features, because it is first built originally for process.
2. Designed specially for dissolving pulps, but will also make bleached paper pulps for market.
3. Engineered and designed for high rate of production, high order of quality, excellent uniformity and low liquor cost per ton of pulp.
4. An outstanding industrial example of automation and remotely controlled instrumentation throughout.
5. Economies in heat and chemical recovery; recovered heat provides 60% of power needs and process is practical means of avoiding pollution.
6. Potentially—perpetual supply of high quality wood, for many years mostly virgin timber, at low stumpage cost.
7. Assured market for most production—destined for American Viscose, which in turn, is assured pulp of high quality and uniformity in steady supply, but other pulp is also available to customers.



NO. 1 MAN IN ALASKA FIRM

LAWSON P. TURCOTTE—President of Ketchikan Pulp Co., President of Puget Sound Pulp & Timber Co. Mr. Turcotte has had longest service of any officer in Puget Sound Pulp, having started with the late founder, Ossian Anderson, as Accountant and General Assistant. He has been intimately active in all the company's progress over 30 years. He was former Pres. of Pacific Coast Assn. of Pulp & Paper Manufacturers and has long been a Director of the U. S. Pulp Producers.



Where's Ward Cove?

And How Do You Get There?

Alaska's first pulp mill is on a very scenic, very small, but very deep bay, six miles north of Ketchikan, with a snowcapped green mountain backdrop. It had a gold mining era history—all but forgotten when the mill came. A public recreation area with good lake and stream fishing and camping sites, lies a few miles up Ward River and at Lake Connell dam. But fishing for 50 lb. fighting salmon in the immediate vicinity of the mill beats that. Beach side homes of Ketchikaners line the highway and Tongass Narrows all the way to Ward Cove.

It is 660 air miles north of Seattle. But big planes have to land at Annette



THEY LIKE WHAT THEY SEE

VIC HANER (left), Resident Manager, and ERIK EKHOLM (right), Vice President of Ketchikan Pulp Co., who was in charge of overall planning and organization, were photographed by PULP & PAPER as they looked down upon the new mill, from a hillside vantage point.

KETCHIKAN PULP CO.

Board of Directors:

Dr. Frank H. Reichel, Chairman (A)
Lawson P. Turcotte (P)
William H. Brown (A)
Erik T. Ekholm (P)
Robert H. Evans (P)
John G. Jackson (A)

(A—represents American Viscose Corp.; P—represents Puget Sound Pulp & Timber Co.—the partner firms).

Officers:

Lawson P. Turcotte President
Robert H. Evans Vice Pres. and Secretary
William H. Brown Vice Pres. and Treasurer

Island, the only flat strip for many miles around. Passengers take little amphibious planes 20 miles to Ketchikan's waterfront.

Ward Cove is 257 air miles south of Juneau, Alaska's capital. It's 1436 air miles east of Nome—"no place like Nome in a tough winter." It's 900 miles southeast of Fairbanks, Alaska, where the University of Alaska may start some pulp and paper technology or practical chemistry courses—it could do worse.

There are planes every day to and from Seattle, sometimes on weekends, two a day. Ditto to and from Juneau. The DC 6B 4-motor jobs will make the flight in 2 hrs. 45 min.

Ketchikan is 750 miles by boat from Seattle and over 600 from Vancouver, B. C. The boat trip from Seattle is 2½ days. Two steamship lines ply the route, one out of Seattle, one out of Vancouver, B.C. In the summer time there are special tourist cruises, too.

Present and Future

Facts About Capacities, Production at Ketchikan

In the first months of operation Ketchikan Pulp Co. has been shooting to reach a minimum of about 300 tons a day of high alpha woodpulp. When running dissolving pulp, yield is somewhat less than when running high grade bleached paper pulp, for an equivalent amount of wood.

Before the year is out, a considerably increased tonnage is expected.

Under the Forest Service contract, the mill is scheduled to expand to 525 tons a day in ten years. It will still be self-sustaining on a perpetual regrowth basis, as required by the USFS.

The mill is built with liberal allowance for expansion. It can reach the 525-ton goal with a very much lower per ton cost of construction.

American Viscose Corp. has contracted for 100,000 tons a year of dissolving pulp for 20 years. This would average about 300 tons a day. Extra tonnage will be available to other markets in dissolving or paper grades.

How Many More Alaska Mills?

Gov. Heintzleman, Alaska's former top forester, says that the Alaska Panhandle—300 miles long and 100 miles wide—can easily support perpetually four other big pulp and/or paper mills. Tongass National Forest comprises virtually all of the Panhandle.

Sitka, Juneau, Wrangell and Petersburg have been suggested as future mill sites.

SEES DREAM COME TRUE

The Hon. B. FRANK HEINTZLEMAN, now Alaska's Governor. As this picture was taken, his mind flashed back 30 years—when he was a young Assistant U. S. District Forester. It was then he consecrated his entire life to bringing a pulp industry to Alaska. Many times he was on the threshold of success, only to be bitterly disappointed. But not once in all those years did he ever give up the dream.



What This Industry Means to Alaska

By B. FRANK HEINTZLEMAN
Governor of Territory of Alaska
(Written especially for this issue
of PULP & PAPER)

• Hereafter in Alaska the 14th day of July will be celebrated as the anniversary of one of the most important events in the Territory's history—the dedication of the Ketchikan Pulp Co.

This is not only the first plant of its kind in Alaska but also represents the largest single industrial investment ever made here. It is an important milestone on Alaska's road to full industrial development.

The timber resources of Alaska have been utilized in a small way ever since man came to these shores. Forest giants were fashioned by highly skilled Haida and Tlingit craftsmen into beautiful and marvelously seaworthy dugout canoes. Timber provided the Indians with materials for permanent homes, for food boxes and for other utensils and implements. The famous totem poles were, of course carved from wood.

Use of this primary resource was increased with the coming of white men, although the overall use, as compared with the vast supply available, was negligible.

The early Russians in Alaska began a shipbuilding industry and at first hewed the timber and planks by hand. Sawmills were established at a number of places as time passed and cut lumber for domestic use and even a little for export to places around the Pacific rim.

With the purchase of Alaska by the United States came new sawmills and in addition a good deal of Alaska

spruce was worked up, mostly by hand, into cooperage for Alaska salt salmon. Still later on, millions of wooden boxes were turned out each year to carry the Alaska canned salmon pack to the markets of the world.

This continued to be a thriving industry until the advent of the wood fiber box, made on Puget Sound, put the local box factories out of business.

The growth of our timber industry in Alaska during the past half century has been spasmodic and slower than we desired, but we have made progress. Our Sitka spruce from Alaska made substantial contributions to the winning of two world wars, and through the years the number and size of our sawmills, cutting both for local use and for shipment to the States and abroad, have increased. Last year the variety as well as the value of our timber products increased with the opening of a plywood plant at Juneau.

A great percentage of Alaska's forest stands is, however, more suited to the production of pulp than for sawtimber or peeler logs. It was this fact that led to the endeavors to get pulp mills into Alaska more than a quarter of a century ago. Several times we have seemed to be on the verge of success, and the success we have so long awaited has at last been attained with the building of the magnificent plant on the shores of Ward Cove near Ketchikan.

The United States Forest Service, which manages the extensive forests of Southeastern Alaska and upon which this new plant depends for an everlasting supply of raw material, must be credited with making it pos-

sible for a concern to enter attractive long term contracts for the purchase of timber. This is a necessary step in arranging for the financing of a costly processing plant such as this.

In preparing for the building of this plant, many obstacles were encountered. Help in overcoming these obstacles came from many sources—from Congress and the various departments of government, both national and local; from local organizations and from private individuals, many of whom worked hard, without hope of personal profit and solely in the interests of the development of Alaska.

The most important effort, of course, came from the men connected with the Puget Sound Pulp & Timber Co., the men of the American Viscose Co., and the representatives of great eastern financing concerns. It was the courage, ability and hard work of these men of high standing in the industrial and business world that in very large measure made it possible to finance, erect and operate this great plant in a pioneer pulp-producing region.

It is not possible at this time to say just how much this new plant is going to mean to Alaska. It will, of course, bring a steady, year-round local payroll of sizable proportions—one of Alaska's greatest needs.

It will mean new industries to serve the pulp industry. It will mean more transportation services, more men in the logging camps, more towboat operations, more business for local merchants and service enterprises. There are other, less immediate perhaps, but no less valuable benefits.



FIRST BALE OF PULP MADE IN ALASKA

This is No. 1 bale, taken by PULP & PAPER within minutes after it was wrapped and tied. Alongside Yale lift truck, ROCKY LINDELL, Asst. Finishing Supt., looks on proudly.

It All Got Started

When a Financier Met a Forester

• One of the interesting sidelights on the new Ketchikan Pulp Co. is the extent to which it was conceived by Pacific Coast men—creative financiers and industrial promoters whose entire careers have long been associated intimately with the industrial growth of the Pacific Coast.

The financial engineering of this mill is a bright marker, signalling the industrial maturity of the Far West.

Elsewhere in this issue is told the story of the important eastern partner that was brought into the venture, American Viscose Corp. And, of course, it is still inevitable in America that most projects as big as this would be at least partially financed in New York. Over two-thirds of the cost, \$36,000,000, was financed through Morgan Stanley & Co., and Dillon, Read & Co., New York, and supplied by Equitable Life Assurance Society, Metropolitan Life Insurance Co. and Mutual Life Insurance Co. of New York.

But all of this does not detract the slightest from the fact that the initial leadership, including the financial planning and thinking that went into it, was in effect, "native" to the Far West. Which shows that old political hacks who still spew about "Wall St. influences" are out of touch with the real United States.

Key figure in this aspect of the picture is Fred Stevenot, a San Francisco financier of vision, as proven by

his 30-year record of enlightened industrial venturing in the West.

He has been president, chairman and director of Puget Sound Pulp & Timber Co. many years, and associated with him in that "native" West Coast company, an industry whose products were shipped all around the world, were genuine Far Westerners. They were also associated with him in the plans for Alaska—men like Lawson Turcotte, a Bellingham, Wash., product; Robert H. Evans, a native of Idaho, now a prominent attorney of Seattle; Henry Robbins, another Seattleite (brother-in-law of President Don Driscoll of Sorg Paper Co.); Ralph Roberg, with a long career of participation, in California and Washington developments.

The story of this new Alaska industry begins with Mr. Stevenot, and an exploratory talk he had in Seattle in late 1945 with Frank Heintzleman, then U. S. forester for Alaska, now its governor. A long evening discussion ensued—about timber and the kind of contract the Forest Service might agree to. One of the names mentioned that night was that of a California newspaper publisher, who had been interested in the crusading for a mill which Mr. Heintzleman had been carrying on for years. But this publisher later decided he didn't want to complicate his publishing business further. By now, however, Mr. Stevenot was not to be deterred.

FAVORITE TOPIC—He had long been keenly interested in timber utilization. Any conversation of any length with Mr. Stevenot nearly always got around to the subject of timber. He had long been an active participant in efforts of the western pulp industry to keep timber supply comfortably ahead of expanding requirements of civilization.

"In 50 years, the population of the U.S. has doubled but consumption of woodpulp has multiplied 16 fold, and the per capita consumption of woodpulp has multiplied 8 times"—these were favorite expressions of his. And it always led inevitably to discussions of "what are we going to do about it?" After that talk with Mr. Heintzleman he always got back to his favorite answer: "Alaska."

Recently interviewed by PULP & PAPER, Mr. Stevenot explained his philosophy:

"Tree growing is like production of corn or cotton or any other crop, with this major difference: the timber growing cycle is longer, the harvests less frequent. A forest, like a field of wheat, should be harvested when ripe. And then steps should be taken to produce another crop. Modern reforestation is to timber management what soil conservation is to agriculture. Any industry using timber is blind to its own basic welfare if it is not making provisions for new crops.

"What I saw in Alaska was an in-

spiring opportunity to start right from the beginning with methods that would mean a perpetual supply of wood where a great forest still had not yet felt the axe for the first time. That is the magnet that drew me to Alaska."

He continued:

"After all, we are only extending the northern boundary of the long established Pacific Northwest pulp producing region a matter of 90 miles. There already were many mills extending up the British Columbia coast to within that close to the Alaska forests. In doing this, we are taking the first step to utilize, with intelligent foresight, and planning, as rich a timber resource as exists anywhere in the world today."

When the possibility of a newsprint mill, linked with market wood-pulp production, petered out, Mr. Stevenot went on to explore other possible partners, and other sources of financing, with RFC, institutional investors, and to find the common capital for founding companies. Many major decisions were so interlocked that the answer to one depended on the answer to the other. Sometimes this meant just waiting patiently, till other avenues had been explored.

For example, Weyerhaeuser was pioneering the magnesia base sulfite recovery cycle in pulp production at Longview. The Ketchikan promoters, aware that a big element of cost could be eliminated if the energy to operate the mill could come from burning chemicals for recovery, decided to see what happened in Longview before making any commitment. They finally chose the MgO process.

Various companies or groups showed varying degrees of interest.



PRINCIPAL UNITS IDENTIFIED

Principal units of Ketchikan mill as shown here are: A—Drying Machine Room. B—Finishing. C—Storage. D—Administration (note covered bridge to mill). E—Surge Bin. F—Pulp Mill (highest portion is red liquor washing and bleach plant; digesters in lower section to left). G—Machine shop and stores. H—Power-Recovery. I—Acid Plant. J—Woodroom. K—Chip silos. L—Filter Plant. Dock for R. R. car ferries at lower right; for sea-going ships at middle right.

A NEW PICTURE— "FATHER" of Alaska's First Pulp Industry

Taken especially for PULP & PAPER, here's how FRED STEVENOT probably appeared as he broached his Alaska dream to Puget Pulp Directors nine years ago.



But for one reason or another, they dropped out. Even after the first get-together with Dr. Frank Reichel, president of American Viscose, there had to be many discussions, studies, tests and negotiations before that partnership matured.

Meanwhile, Mr. Stevenot passed the torch to Mr. Turcotte, who succeeded him as president of Puget Pulp and it was the latter who was responsible for bringing the biggest rayon manufacturer in the world into the partnership, and with this an assured market for a major portion of the mill production.

Mr. Stevenot, while not as active, continued his interest in the new Ketchikan company. It could not be otherwise for Mr. Stevenot, for he had figured in Puget Pulp's development since 1937 and especially since he stepped into the presidency when Ossian Anderson died in 1941.

Why Was Ward Cove Selected for the Mill?

Lawson Turcotte, president of Ketchikan Pulp, asked by PULP & PAPER to give the reasons for selecting Ward Cove as the site of Alaska's first pulp mill, listed them in this order:

1. Access to a perpetually renewable vast supply of timber.
2. Close to good water supply for process—Lake Connell (a big water supply was not needed for power, as this MgO process mill creates energy through recovery of used chemicals).
3. Close to an existing municipality—Ketchikan—so an entirely new town site did not have to be built.
4. A protected deep water harbor

for shipping and log storage.

5. The most southerly site possible in Alaska—nearest to suppliers and markets.

Where First Pulp Is Going

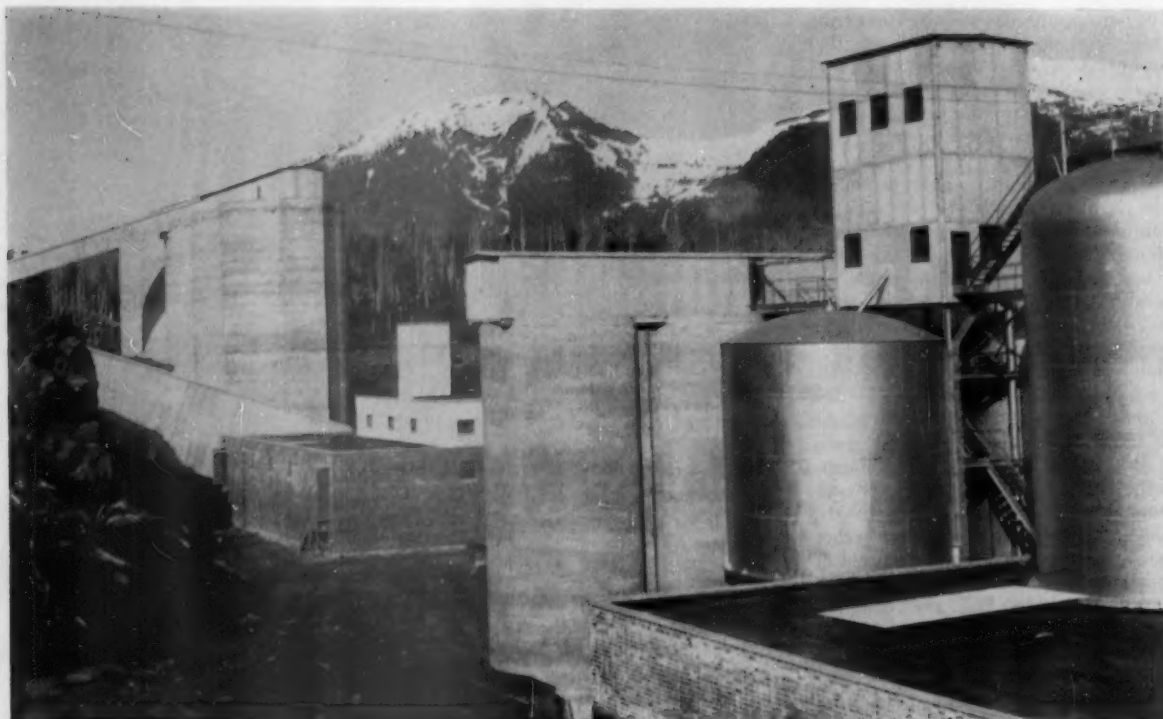
Ketchikan Pulp Co. already has shipped its products to widely separated parts of the world. For years to come, it literally will carry that name around the globe.

First shipments were proceeding both by car ferry and railroad to eastern U. S. and by big ocean-going freighters to other far distant ports.

The first rolls of dissolving pulp were loaded directly into railroad cars, onto the 20-car ferry, to Prince Rupert, B.C., then by railroad to Avisco plants in the East. By car ferry, pulp also has been shipped to the paper industry in the Midwest.

The first shipments of baled pulp via the ocean went into the holds of two big freighters headed for Argentina. A Japanese shipment was another early one by sea route. The ship loading dock has 40 ft. of water at low tide.

Pulp destined for eastern U. S. may go either via Prince Rupert, B.C., or Tacoma, Wash., probably depending on its ultimate destination. For the Chicago, Milwaukee Railroad and Foss Launch & Tug Co. have matched the joint rates of Canadian National Railway and Canadian Tug and Barge for water-rail shipment. The former involves an 850-mile r.r. barge tow to Tacoma. The r.r. car ferry to Prince Rupert is only an 90-mile water passage. R.R. cars, loaded at the mill, are not unloaded till they reach their destination.



HALF MILLION YDS. SOLID ROCK BLASTED AWAY

The 50 ft. cliffside cut, at right, shows how big a job it was to level solid rock foundation for mill. At right is acid plant,

sulfur silos, with Fuller Airveyor in high house. Steel tanks are MgO (small) and cooling tower. Chip silos, far left.

Magnitude of Alaska Mill is Impressive

Figures may suggest its great size but only seeing does justice to giant mill built on solid rock

• The sheer magnitude of the Alaska project is exciting and impressive to visitors. Figures alone may suggest its immensity, but seeing is believing. From Ketchikan, the mill is about six miles northward via a new paved roadway bordering Tongass Narrows. As your car sweeps around a point of land into Ward Cove, across this little bay you are suddenly dazzled by the view of the massive plant. Most planes to and from Alaska fly over it, and the view is just as spectacular from the air. Most ships plying Alaska trade pass north and south through Tongass Narrows, and inevitably their passengers will rush to the rail for a few minutes glimpse of the modern mill in this Northern wilderness.

The permanence of brick, concrete and steel and the latitude allowed for future expansion to a 525 tons-per-day mill by 1960, are all the more impressive because it is in a wild country where for hundreds of miles in any direction one sees seemingly endless spruce and hemlock forests on jagged rocky hills and mountains and a myriad of islands. Trees grow right down to the water's edge, and only an occasional little town or fishing village, Indian camp, or lone prospector's hut breaks the primeval picture.

PULP & PAPER's editor flew over many miles of this maze of inlets and green blanketed hills and peaks in a

little Aeronca to visit Ketchikan Pulp's first logging camp. It is on 140-mile long Prince of Wales Island where the only roads in existence are a few short crushed rock logging roads, and the only habitations are occasional camps along the winding shores.

WHAT IT LOOKS LIKE—But back to that first dramatic view of the mill—a cluster of imposing structures dominated by the five-story high modern brick pulp mill proper. "Ketchikan Pulp Co." in 6 ft. high enamel letters are across its upper facade. In this same building, on the water side, is red liquor washing and bleach plant. At

stepped-down heights behind this are digesters and accumulators.

An almost square, entirely covered water treatment plant, on the hill behind it, covers nearly two acres. A steel and concrete dock with five railroad spurs, two directly serving a car ferry dock, is in the foreground. Other main structures are a wood preparation plant, power-recovery plant, machine shop-storeroom, five 100 ft. high chip silos, a long pulp drying, finishing and shipping building adjoining the pulp mill, and other smaller buildings, sulfur silos, storage and mixing tanks.

All this is on a 53-acre mill site along the north shore of Ward Cove blasted out of solid rock.

Drifting in shelter along the cove's north shore are logs headed for the mill. They are in flat rafts, bundles and cribs of big logs weighing 4 or 5 tons each. Their destination is the 1600 by 380 ft. log pond, protected with creosote piling, and finally, the towering all-steel 240-ft. log haul.

For those who like figures, the digesters, accumulators, washing, screening and bleaching processes, unusual in that they are all in one structure, cover an area 227 by 195 ft. This is adjoined by the drying, finishing and storage building, 77 by 535 ft.

Boilers, evaporators, turbines and acid plant, also combined, cover 178 by 294 ft. Wood preparation is in a 100 by 165 ft. building. Machine shop and storeroom are in an 88 by 200 ft. structure.

The water treatment plant, unusual because it is rectangular instead of a group of circular tanks, is 274 by 300 ft. The five chip silos, of slip-form concrete, are each 50 ft. in diameter, 100 ft. tall. The concrete dock is 74 by 800 ft., in 40 ft. of water at low tide. On it is a 50 by 280 ft. building to store ocean-going pulp. The railroad yard's five tracks are able to handle 80 r.r. cars.

In the finishing extension of the pulp mill, the drying machine room alone is 460 ft. long, 77 ft. wide. Adjoining is 75 by 240 ft. for finishing, 240 by 240 ft. for storage, all three units forming an ell with r.r. tracks and r.r. ferry slip at the end. In addition, are various concrete or steel tanks, including a 55,000 bbl. fuel storage tank.

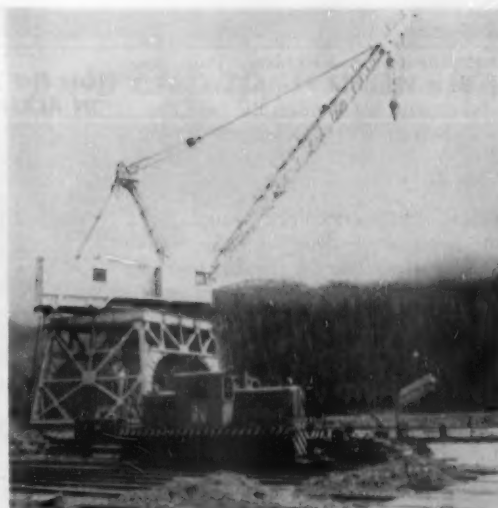
FACTS ABOUT CONSTRUCTION

—All concrete was poured in place. All buildings have pre-cast concrete roofs, insulated for condensation with Armstrong Cork Unibestos. Over 85,000 cu. yds. of concrete was poured for all construction, of which 30,000 cu. yds. went into the Lake Connell dam, 3½ miles from the mill. Since the magnesia base recovery cycle is used, creating energy as well as reclaiming chemicals, this dam was built only for mill process water.

A new type of Brooks Lumber Co. patented butt-locked pentachlorophenol-treated wood-stave pipe was used for water lines. There are 3½ miles of this 60 in. pipe, to the filter plant. Two pipe lines, one for chemically treated water and the other for untreated, run from filter plant to storage ahead of the processes. The filter plant is designed for 50,000,000 gals. per day.

When you drive around the new road to the inland side of the mill, you are treated to another impressive view. An entrance driveway from high up on the rocky slope swings down to a modernistically designed administration building in Alaska motif. A frame building on concrete foundation, its exterior is stained cedar siding and the interior is birch paneled. Two totem poles, carved by an old local Indian, grace the glass-paneled entrance.

WASHINGTON IRON WORKS 50 ton whirly crane is unloading lumber for mill use, with mill's Baldwin locomotive on near spur.



The administration office is on the upper level. On the lower level are unusually well-equipped laboratory and research facilities and instrument shop. From this level a completely housed pedestrian bridge crosses from the cliff side to the fourth floor of the pulp mill, 220 ft. long and 50 ft. off the ground. Time clocks are on this bridge where all employees pass to and from work.

Through its windows one sees the perpendicular rock cliffside, a 50 ft. cut, evidence of the big blasting job that was done. A half million yards of rock had to be moved by blasting and bulldozing.

This rock had to be moved out into deep tidal water, 32 ft. below mean lower low tide, to build up a foundation for the big dock and the log haul and railroad spurs. Dames & Moore, San Francisco specialists, advised on placement of rock fill. There was

enough silt at the bottom for steel piles, and rock was used to fill around the piles and below the dock. Steel, not wood, had to be used, for if the wood rotted, new piles could never be driven through the rock again.

The machine shop and stores building is also on the fill. Every other building is on solid rock. And the fill is, in effect, solid now.

The bricks used in construction are twice the size of common bricks. They are called dual bricks and were supplied by Builders Brick Co. of Seattle. All concrete for construction was poured in place. All buildings have pre-cast concrete roofs and these are all insulated for condensation by Armstrong Cork Unibestos. Aluminum thermopane windows are used in the administration building and all heat-saving type continuous fenestration for even lighting of machinery for mill buildings.



LINK-BELT SPEEDER DID BIG JOB

A 20-ton truck crane, it helped in construction, and stays on job at mill during operations. Hooker chlorine tank cars in background

The first barge of construction equipment for Ketchikan Pulp arrived at Ward Cove on June 2, 1952, and ground was broken the next day. The first pulp went over the drying machine just short of two years later—May 27, 1954.

PEAK EMPLOYMENT—1400— At the peak of construction there were 1400 employed on the site, but for the first year, devoted mostly to excavation, the peak employment was 400. All machinery and all materials shipped in, came by barge. Not a single pound was lost. At first supplies were towed 750 miles from Seattle by American Tug & Barge, and later from Everett, Wash., just 30 miles closer. By May 1953, ferry service with Prince Rupert, B. C., had been inaugurated, and this was only a 90 mi. trip. Machines and materials from the east came this way, via Canadian National, the same route now taken by pulp headed to Avisco plants and eastern paper mills. But throughout construction there were still big barge loads that continued to be towed from Puget Sound.

Builders developed their own gravel supply of good quality from upriver, east of the mill, setting up their own dredging operation. It was all washed at the mill site, producing highest quality Ottawa standard gravel.

It was the first time in history that barges ever transferred loaded freight cars from the United States to Alaska. Tracks for arriving cars were among the first installations at the cove. Bethlehem Pacifics' Seattle fabricating plant shipped 20,000 tons of steel for conveyors and building structures this way, on barges that handled as many as 20 r.r. cars each. Altogether 155,000 tons of construction materials were handled over the dock, coming by barge or ship.

Interesting sidelight on construction work at Ward Cove is that a direct teletype operated all through the two years between the Puget Sound Pulp & Timber Co. in Bellingham,

ON THE JOB IN ALASKA

HAROLD D. CAVIN (left), Chief Engineer for Ketchikan Pulp and also for Puget Pulp, and **HENRY B. PRATT JR.** (right), Project Engineer on the Alaska construction for Ketchikan Pulp.



Wash., and the Ward Cove site.

Another early action was to install RCA mobile radios in all supervisors' cars, with strategic stations on the mill site, and even the new Ketchikan apartment houses where workers stayed, were equipped with these radios. This form of communication saved many man-hours.

HOW MATERIALS WERE HANDLED—Materials handling was a big job. Barges and car ferry were unloaded with mobile cranes. A big 50-ton whirly crane by Washington Iron Works, was an early arrival, operating on the dock r.r. spurs and is still in use. Also a Baldwin-Lima-Hamilton 50 ton Westinghouse diesel electric locomotive was the first ever used in Southeast Alaska, and is still in use to move the r.r. cars.

Used during construction were a 15-ton Lorain mobile crane and a 20-ton Link-Belt Speeder truck crane, both being retained for use at the mill. Beside this, Lorain 20-ton and 15-ton tractor cranes have been sent to logging operations after use during construction. Two 30-ton Insley cranes, Yale fork lift trucks and automobile trucks were used during mill building.

Employees were transported to and from Ketchikan by a fleet of 26 buses during the peak of construction. But many of them lived in good-sized bunkhouses—33 in all—at the mill site, and later these were used by

erectors and startup staff sent by equipment suppliers. Finally, all these big bunkhouses were loaded onto barges and moved to the new permanent logging camp, along with cookhouse and mess hall.

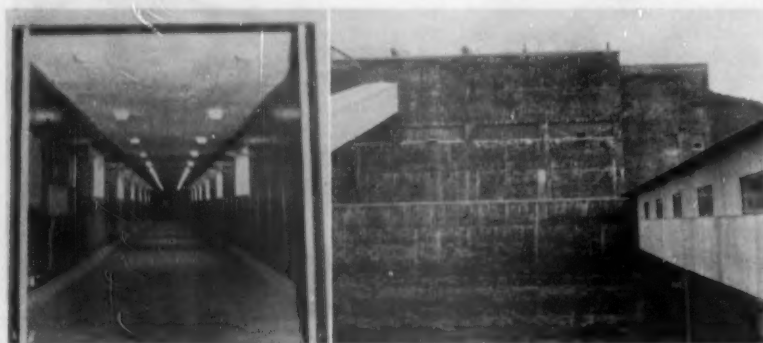
Ward Cove Builders, a firm created by the two major contractors, Howard S. Wright Co., and Guy F. Atkinson Co., both of the Pacific Coast, were principal contractors for building of structures and installing equipment. C. C. Moore & Co., Engineers, Pacific Coast representatives of Babcock & Wilcox and other power-recovery suppliers, had charge of furnishing and installing that part of the plant. Stevenson & Rubens, Seattle, made structural plans for drying and finishing departments and filter plant. Will D. Shannon, Seattle, veteran Alaska hydraulic engineer, was consulting engineer on dam and water problem.

In the building of this mammoth mill, a fact emerges that may be without parallel in this industry's whole history. It indicates the magnitude of the job. It is this—there were no less than 12 different major manufacturers of equipment who did more than \$1,000,000 each in business at Ward Cove. Besides this, several suppliers of construction materials were also in the 7-figure class.

Stebbins Engineering, through its Seattle company, did one of the biggest single chemical linings jobs in its history. The amount of stainless steel piping installed would rank at top or near there for this industry, and major fabricators were Northwest Copper of Portland, Ore., and Alaskan Copper of Seattle. The stainless steel that went into everything from large fabricated tanks and process equipment to a multitude of valves very likely was a record, too.

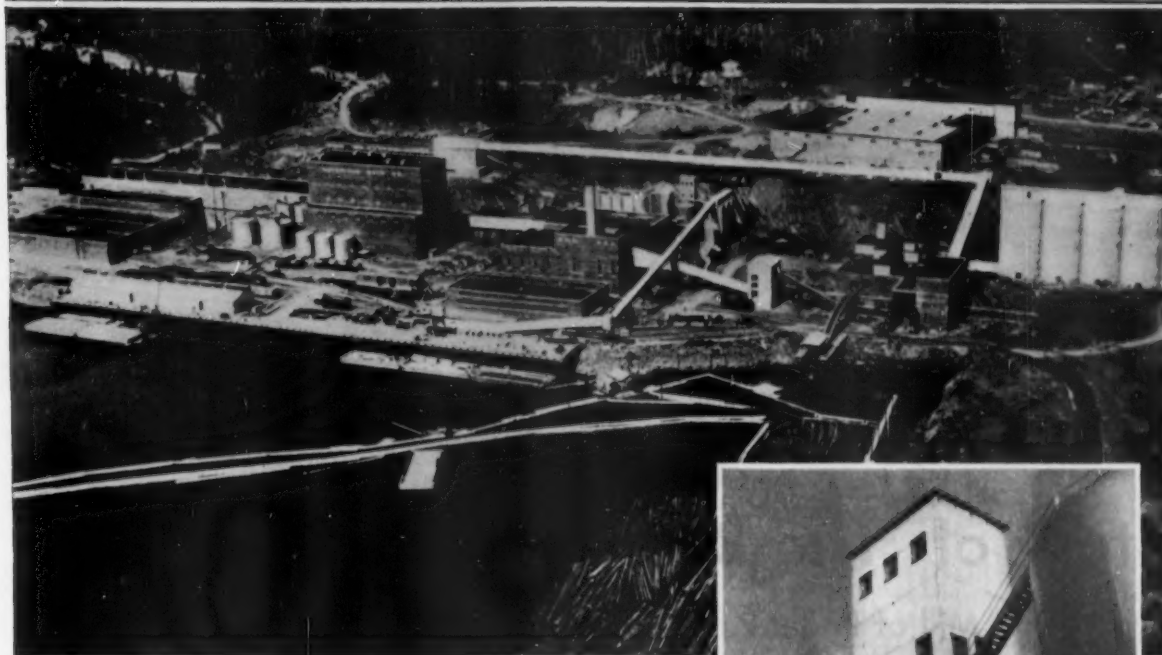
Harold D. Cavin, chief engineer for Ketchikan Pulp as he has been for Puget Pulp, moved to Ward Cove in Nov. 1952, after plans were all completed and major equipment all ordered. This was seven months after ground was broken. He was soon joined by Henry B. Pratt, Jr., project engineer.

Continued on page 117



INSIDE (left) and OUTSIDE (right) of unusual 50 ft. high 220 ft. long covered bridge (with time clocks) connecting administration building and the mill. The other structure entering mill in picture at right is covered chip conveyor to digesters.

Another **AIRVEYOR** in the pulp & paper industry



Ketchikan Pulp Company joins a long list of users

International Paper
Fibreboard Products
St. Regis Paper
Buckeye Cellulose
Hudson Pulp & Paper
Rayonier, Inc.
Mason Kraft
Gaylord Container
Brown Paper Mill
Eastern Corp.
Fraser Paper
Oxford Paper
W. Virginia Pulp & Paper
Tilston & Hollingsworth
Fitchburg Paper
Escanaba Paper
Blandin Paper
Minnesota & Ontario Paper
Brown Co.
Finch-Pruyn
Newton Falls Paper
Hlegel-Carolina
Chillicothe Paper
Mead Corporation
Oxford-Miami

Crown-Zellerbach
St. Helens Pulp & Paper
Scott Paper
New York & Pennsylvania
Barr Paper
Glatfelter Co.
Bowaters-Southern
East Texas Pulp & Paper
Champion Paper & Fibre
Camp Mfg. Co.
Chesapeake Corp. of Va.
Puget Sound Pulp & Timber
Weyerhaeuser Timber
Consolidated W. P. & Paper
Kimberly-Clark
MacMillan & Bloedel
Smith Paper Mills
Dryden Paper
KVP Company
Marathon Paper
Ontario Paper
Brown Corp.
Canada Paper
Ketchikan Pulp



Conveying duct from car to Airveyor filter in penthouse; delivers to and reclaims from storage bins.

Again, another Airveyor system has been put into operation, this time in the first major industrial plant in Alaska—the Ketchikan Pulp Company's 50 million dollar plant at Ward Cove, producing 300 tons daily of the highest qualities of chemical cellulose for U. S. and world-wide markets.

The Airveyor system handles bulk magnesium oxide, conveying from cars to two storage bins; reclaims from either of these storage bins for transfer to a day bin. The system is so arranged that materials can be recirculated from one storage bin to another if desired. Conveying rate for any of the above operations, 10 tons an hour . . . rapid, clean, efficient conveying all the way—from cars to process.

The pulp and paper industry has learned by experience that the Airveyor is engineered and built for superior performance for its particular use. Why not have a Fuller engineer make a study of your conveying problems . . . such a study costs you nothing, obligates you in no way.

FULLER COMPANY, Catasauqua, Pa.

GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY

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TIME OUT FOR NOURISHMENT

Good food in attractive cafeteria in the Administration Bldg. of Ketchikan Pulp Co. Arrow points to VIC HANER, who was

in charge of design and planning of new mill, and is now its Manager. He faces camera at one of tables at right.

Story of "The Bellingham School"

Mill of Puget Pulp served as training school for large group of new mill employes for Ketchikan

• To Erik Ekholm, vice president of both Puget Pulp and Ketchikan Pulp, who had overall charge of planning and organization for the new mill, one of the most important tasks of all was the selection of the personnel.

"We could not compromise with quality and character in this matter," he told PULP & PAPER. "We had to be very selective for two reasons. First, we were building a mill in a rather remote country where there had never been a mill before. Secondly, we would be using new processes and a very high degree of carefully controlled operation throughout. The training and personalities of our staff could make or break such an undertaking."

President Lawson Turcotte and others consulted Mr. Ekholm on many problems, but even with the multitude of questions thus coming to his attention, he did not stint on time and effort given to personnel selection.

The "training school" was in Bellingham, in the actual operations of the "sister" mill, Puget Pulp. In the case of about 70 members of the selected staff, it extended over five months. These were operators, technicians, chemical engineers, machine tenders, cooks and acid makers. Part of their training was to be placed in the regular crews of the Bellingham mill, and work right on the job there.

About 60 others required lesser periods of training, in some cases only a few weeks. These included about 15 mechanics.

Thus, about 130 of the 260 mill employes—exclusive of office and salaried employes—for the Ketchikan mill underwent this special training program. A total of about 300 are employed in the Alaska mill.

About 90 of the 260 mill employes were engaged in Ketchikan. Only a very few of the others came from the Bellingham mill's own staff, as it was determined as best to keep those crews intact. The new crews came from many parts of the United States and Canada, many of them having had mill experience elsewhere.

The new crews, when not working in operation of processes in Bellingham, also spent much of their time in the mill offices, writing up schedules and studying flow sheets and equipment.

Mr. Ekholm named Svarre Hazelquist, general superintendent of Ketchikan Pulp, as "dean" of the Bellingham "school." He had direct charge of the training courses. In fact, very soon after he was appointed to his own position, he reported to Bellingham and one of his first important duties there was planning the training program. Mr. Hazelquist came from Weyerhaeuser in Longview, Wash., the only other mill in

the world using the MgO system, where he was technical director.

Assisting in giving the new staff their technical training was Don Pearson, who is technical director of the new mill and was on the Puget Pulp staff. Both he and Mr. Hazelquist are University of Washington graduates.

Mr. Ekholm selected all key superintendents. The mill manager, Vic Haner, and Mr. Pearson were the only two who came from key positions in Bellingham. It is notable that Mr. Ekholm was successful in finding a few key men who already had lived in Alaska and liked it. Personal character of all these men, more than their pulp mill experience, rated very high with him.

EKHOLM'S EXPERIENCE

GUIDED HIM—In selecting men for his Alaska "team", Mr. Ekholm's own experience in making his way in the industry must have influenced his thinking, unconsciously perhaps. He came to the United States as a young man just out of college in his native Sweden. His father, who had 35 years in the industry, gave him his early training. His home town mill, Konya, is recognized as the first producer of dissolving pulp in Sweden. Mr. Ekholm decided almost immediately on arriving in America to go to the

Pacific Northwest, where a sulfite pulp industry was newly developing. He started in the West's first market sulfite pulp mill, then being built in Shelton, Wash., where history was made in utilizing Western hemlock, a scorned tree up to them. There he accepted a position as acid maker.

Within a very short time, Mr. Ekholm was offered a position as chemist in the new mill being built in Bellingham-Puget Pulp. A week after he arrived there he bought his first piece of property—he planned to stay around a while. He rose through the ranks to general superintendent of a mill that soon ranked as the second biggest sulfite mill in the world. Several years ago he was elected vice president in charge of operations.

But he was still a mill man at heart when the Alaska mill started. PULP & PAPER was on hand to see this first-hand—when it was decided to start up, he worked days and most of the nights with his associates to get the various processes into successful operation.



IN NEW MILL'S CONFERENCE ROOM

The subject of discussion is the staff, the personnel, the human problems of the industry . . . obviously, because in this picture by PULP & PAPER are (left to right): R. E. (BUD) STEFFEN, Personnel Director; LAWSON TURCOTTE, President, and ERIK EKHOLM, Vice President in charge of planning and organization.

New Kind of Pioneer Arrives

THUMBNAIL SKETCHES—THEIR LIFE STORIES

Mill Staff in Ketchikan

VIC HANER, resident manager. Born in Bellingham, Wash. Graduate of U. of Washington. After state highway and structural steel draughtsman jobs, he helped build Puget Pulp's first unit in 1937. After a short absence on other work he was back in 1941 as chief draughtsman for Puget's second unit. In 1942 he became Puget Pulp's plant engineer. He assisted in planning and design of the Ketchikan mill. Wife, Alma, and son, Malcolm, later joined him in Ketchikan. Two other sons are in college "State-side."

SVARRE HAZELQUIST, general superintendent. Born in Suletelma, Norway. Graduated U. of Washington, 1930. Joined Olympic Forests (now Rayonier) sulfite pulp mill at Port Angeles, Wash., as chemist. In 1931, went with Weyerhaeuser sulfite mill, Longview, Wash. Was technical director 1944-1953, then joined Ketchikan. Thus, has served in only two mills in world using MgO sulfite recovery system. Svarre and wife, Millie, have married daughter in Hoquiam and are new grandparents; a son in U. of W.; another son starting school in Ketchikan.

ARTHUR M. BROOKS, woods operations manager. Came from Pope & Talbot, pioneer lumber and logging firm of Washington and Oregon. Long experience in operations in those two states, especially at Port Gamble, Wash., and Roseburg, Ore.



SVARRE HAZELQUIST (left), General Supt.; and **DONALD PEARSON**, Technical Director.

DONALD PEARSON, technical director. Native of Washington state, graduated in chemiengineering from U. of Washington. In technical department at Puget Pulp about 5 years before assigned to Ketchikan. Carried large responsibility on planning the new mill.

CARL RIES, plant engineer. Born in Marion County, Ore. Columbia University, Oregon State College. Two years in public utilities engineering before joining Weyerhaeuser sulfite mill, Everett, Wash., in 1936. In 1945 left there for Hines, Ore., as plant and woods engineer for Hines Lumber Co.

R. E. "BUD" STEFFEN, personnel director. First management employee in Ketchikan, where he opened personnel office two years before startup. Already had been there some time as head of ter-

ritorial employment office in Ketchikan. Born in Montana, educated at Stanford, was with Matson Navigation in California before heading for Northland.

JOE KOLBERG, acid plant supt. Born in Vancouver, B.C. Graduated U. of Brit. Columbia, ch. e., 1948. With Pacific Mills, Ocean Falls, B.C., until 1951, when joined Puget Pulp as project engineer.

DICK HOPSON, bleach plant supt. Born in North Carolina, served in Army Military Police, 1943-46. Graduated from Rensselaer Polytechnic Institute, Troy, N.Y., 1951. Same year joined Puget Pulp as chemical engineer.

ARTHUR DAMMANN, instrument engineer. Born in New York City, he attended North Carolina State College and later U. of Washington for master's degree. Was with Bristol and Foxboro instrument companies before joining Ketchikan in 1953. On his present job in Alaska, he renewed friendship with an Amityville, Long Island, high school chum—Willard Osborn, service engineer for Impco.

LYMAN YOUNG, power-recovery supt. Born in Winthrop, Ark., where started at age of 17 (1919) in light and ice plant. Went with Hoquiam, Wash., pulp mill when it was built in 1928, then to Crown Z's Cathlamet, Wash., sawmill. In 1936, became shift engineer with Weyerhaeuser sulfite mill in Everett; in 1947 went to Columbia Lumber Co., Whittier, Alaska, as chief engineer. Joined Ketchikan in Oct. 1953.

MERRILL NORWOOD, finishing superintendent. Born in Glen Park, N.Y. Started in paper industry with International Paper Co., Watertown, N.Y. Moved to Pacific



PERSONNEL IN THE ALASKA PICTURE

(L to r) CARL RIES, Plant Engineer; JOE KOLBERG, Acid Plant Supt.; ART DAMMANN, Instrument Engr.; LYMAN YOUNG, Power-Recovery Supt.; MERRILL NORWOOD,

Finishing Supt.; ROCKY LINDELL, Asst. Finishing Supt.; DICK HOPSON, Bleach Plant Supt.; GEO. O. NELSON, Sulfit Supt.; TED ROWELL, Wood Plant Supt.; PAUL JACOBSON, Chief Chemist.

Coast in 1922 to be machinetender at Camas, Wash. Served 10 years as paper mill supt., Columbia Paper Mills, Vancouver, Wash., 1933-43. Went to St. Helens Pulp & Paper as a superintendent, joining Ketchikan in Nov. 1953, to be in charge of big pulp dryer and operations after the pulp mill and bleach plant.

GEORGE O. NELSON, sulfit supt. Born in Stevens Point, Wis. At age 5, arrived in West and graduated U. of Washington, 1932. Entered industry at Anacortes mill, then owned by Puget Pulp, becoming chemist in 1936. In 1938 went to Camas, Wash. In 1942-5 was Signal Corps radar engineer, returned to Camas, then to Coos Bay, Ore., as technical director. Joined Ketchikan Jan. 1, 1953.

PAUL JACOBSON, chief chemist. Born in Kansas City, Mo. Graduated from U. of Illinois in 1949, went on to get a ph.d. in chemistry at Northwestern U. in 1953. His own personal search for a progressive industry led him to Puget Pulp, where was engaged for the Ketchikan staff. His criticism of Midwestern colleges—they didn't have any information on Puget Pulp, one of Far West's great chemical industries.

ROCKY VERNON LINDELL, assistant finishing supt. In charge of all finishing after the dryer. Born in Yacolt, Ore. With Rayonier 21 years. Was supt. of finishing, warehousing and shipping at Rayonier's Hoquiam, Wash., mill. Joined Ketchikan Nov. 15, 1953. The Lindells have twin 24-yr.-old sons: Bill, with a Seattle insurance firm; Rocky Jr., who was president of U. of Wash. student body this year. Father Rocky has mill record for biggest fish caught—150 lb. halibut.

TED ROWELL, wood plant supt. Born in Long Lake, Saskatchewan. Served in Canadian infantry in France in W.W.I. Later sawmilled in British Columbia; in U. S. after 1925. Became supt. of wood break-down plant at Weyerhaeuser's Everett sulfit mill in 1936 and was there when hydraulic barking was introduced. In 1945, became sawmill supt. for Columbia Lumber Co., Whittier, Alaska. Joined Ketchikan Oct. 1953.

DON SOULE, purchasing agent. Born in

Washington state, raised in Seattle. Was with Guy F. Atkinson Co., San Francisco contractors, as assistant purchasing agent from 1947-52, including three years at Richland, Wash., atomic energy plant. When the Atkinson firm became co-contractor for building the Ketchikan mill, Mr. Soule took position as the mill's p.a., joining Ketchikan in June 1952.

TIM TITMUS, assistant purchasing agent. Born in Michigan, he was special buyer and was associated with Mr. Soule at Richland, Wash. He went to Alaska with the Atkinson firm as buyer on construction. In Apr. 1953 he went over to the staff Ketchikan Pulp.

L. C. JONES, traffic manager. Born in Escanaba, Mich. Had wide experience in traffic matters.

Eric O. Ericsson, Gen. Supt. at Puget Pulp, was important advisor on Ketchikan project in all process and equipment matters.



RIGHT HAND FOR MR. EKHOLM

DON BELL, assistant personnel director and safety director. Born in Bellingham. Graduate of Western Washington College there. Served in Air Force in war, was manager of Bellingham's airport for 7 years after the war. Went to Nome, Alaska, as expeditor for a construction company for a season before joining Ketchikan in Jan. 1953. Was in charge of safety program during mill construction.

EARL SHIPLEY, general logging supt. His base is Hollis, Alaska, first logging headquarters camp. Was with Pope & Talbot logging and lumber firm at Oak Ridge, Ore., with Mr. Brooks, woods mgr.

GEORGE BOUHY, construction supt. Also based at Hollis, where he was in charge of building the first camp.



FRONT OFFICE MEN

(L to r): **TOM TITMUS**, Asst. Purchasing Agent; **DON SOULE**, Purchasing Agent; **DON BELL**, Asst. Personnel Director and Safety Supervisor.

Construction Staff and Bellingham Staff who Serve in New Mill

HAROLD D. CAVIN, chief construction engineer. Born in Anaconda, Mont. Attended U. of Montana. Served in Navy in W.W.I. and was Commander of a Seabees construction battalion in Pacific in W.W.II. After first war, was a Tacoma, Wash., city and port construction engineer. In 1928, was field engineer for building Union Bag mill at Tacoma (now St. Regis), and in 1930 for Puget Pulp's Everett mill (now Scott), where he was plant engineer till 1936. Went to Tacoma for St. Regis reconstruction there. In 1937 he headed firm which built Puget Pulp at Bellingham. Went to Sweden for 6 mos. in 1938. Was Hardy S. Ferguson Co. resident engineer in charge of construction of Hollingsworth & Whitney mill in Mobile, Ala. Returned to West Coast to build Puget Pulp's second unit at Bellingham in 1940. With Seabees, 1942-45, returning to Puget to construct its board mill, and went to Alaska for Puget for first time in 1946. From then on, Ketchikan was his main interest, though he did other consulting engineering. He moved to Ward Cove Nov. 1952, remaining until June 1954.

ERIC O. ERICSSON, general supt., Puget Sound Pulp & Timber Co. Native of Washington state, and graduate of U. of Washington in chem. engineering. He was technical director at Bellingham for

SF VENTILATION

in Ketchikan Mill

This system gives highest heat efficiency at highest drying capacity. Condensation is non-existent and working conditions are ideal.



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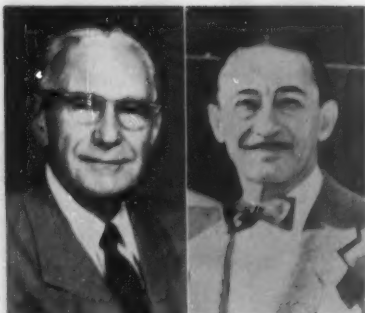
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Before the end of 1954 SF will have a Branch Office operating in Vancouver, Canada, to service Oregon, Washington, Alaska and Western Canada.



MORE KETCHIKAN AIDES

RALPH M. ROBERG (left), Vice President and Sales Manager of Puget Pulp; RUSSELL DE LOPEZ (right), Asst. to Vice Pres.



DR. ROBERT E. BROWN (Left), Consulting Chem. Engr.; DAN ROBBINS (right), Chief Draughtsman.



DR. GRAY KING (left), Research Director at Puget Pulp, and NORVAL MAGNUSSON, Technical Director at Puget Pulp.



CARL V. ASHLIN (left), Timber Mgr. of Puget Pulp; IVAN CAMPBELL (right), Instrument Engineer.

years before his promotion to general superintendent. Mr. Ericsson was consultant to the Ketchikan staff on chemical and flow problems and their development and advised on all process designs. His experience was used in selection of equipment.

RALPH M. ROBERG, vice president and sales manager of Puget Pulp. In collaboration with agents, Bulkley, Dunton Pulp Co., he also directs sales of pulp from the Ketchikan mill allocated for market sale. Bleached high quality paper pulp is being made as well as dissolving cellulose. Mr. Roberg is a pioneer of the industrial west, and has been with Puget since 1929.

CARL V. SAHLIN, timber manager of Puget Pulp. He attended the U. of Washington forestry school. Has had long experience in Pacific Northwest woods operations.

DR. ROBERT E. BROWN, technical consultant to Ketchikan Pulp Co. Born in Dayton, O., he graduated from Miami University in Ohio, got his master's at Princeton and ph.d. in chemistry and chemical engineering at Iowa State, 1930. Then he joined the Rayonier predecessor company at Shelton, Wash., continued in central research with Rayonier there. Was assistant manager of Rayonier's Hoquiam mill and was with its technical sales division in New York. He started doing consulting work for Ketchikan Pulp and others three years ago.

HENRY B. PRATT, JR., project engineer and chief assistant to Mr. Cavin. Born in Waltham, Mass. Graduated from Worcester Polytech Institute in 1932. Started in the industry with Hardy S. Ferguson Co., and was assistant to Mr. Cavin in 1940-41 in building H & W mill at Mobile. Was construction engineer for eight years with Union Bag & Paper Corp., in Savannah, through most of its postwar



THEY REPRESENT AVISCO

M. B. HODGES (left), long stationed at the Puget Pulp mill in Bellingham, Wash., where he represented Avisco, has been elected Asst. Treas. of Ketchikan Pulp Co. KEN P. GANT (right), who has office at the Alaska mill, representing Avisco. It wasn't long before he was nicknamed "Ketchikan Pulp" Gant, because of his initials.

expansion. Joined Mr. Cavin in Sept. 1951 in Bellingham. Since completion of the mill, Mr. Pratt has joined Stevenson & Rubens, consulting engineers of Seattle, who have helped build mills in South and West.

DAN ROBBINS, recently promoted to plant engineer at Puget Pulp. Was chief draughtsman during the construction period for Ketchikan. Has succeeded Mr. Haner as plant engineer at Puget Pulp. Mr. Robbins was born in Minneapolis. Graduated from Haverford College, Philadelphia, in 1938, when he joined Puget Pulp's engineering and headed its drafting room since 1942. Father is Harry Robbins, Seattle, who served Puget Pulp as director for 25 years, and uncle is Don Driscoll, president of Sorg Paper Co.

DR. GRAY KING, research director, of Puget Pulp, formerly with Rayonier, served Ketchikan in an advisory capacity. So did:

NORVAL MAGNUSSON, technical director, Puget Pulp.

IVAN CAMPBELL, instrument engineer for Puget Pulp.

ROBERT PARKS, formerly with the Milwaukee Road organization, was secretary to Harold Cavin, and A. R. CARLSON served under Mr. Cavin as field engineer.



ROBERT H. EVANS, photographed beside Ketchikan Pulp Co. totem pole by PULP & PAPER, is Vice Pres. and Sec'y of that company.

Evans Becomes Chairman of Puget

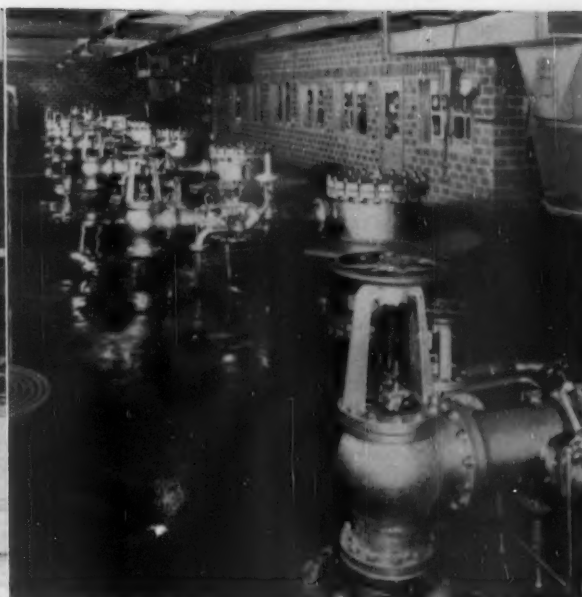
Robert H. Evans, Seattle attorney and counsel and director of both Puget Sound Pulp & Timber Co., and Ketchikan Pulp Co., has been elected chairman of the board of the former company, succeeding Fred Stevenot. The latter continues as a director.

Mr. Evans also is vice president and secretary of Ketchikan Pulp Co. He became counsel for Puget Pulp in 1929 when it was incorporated and a few years later was made a director.

He was born in Genesee, Idaho, but his family brought him to Seattle as a child in 1885. He graduated from the University of Washington in 1904 and from its law school in 1906.

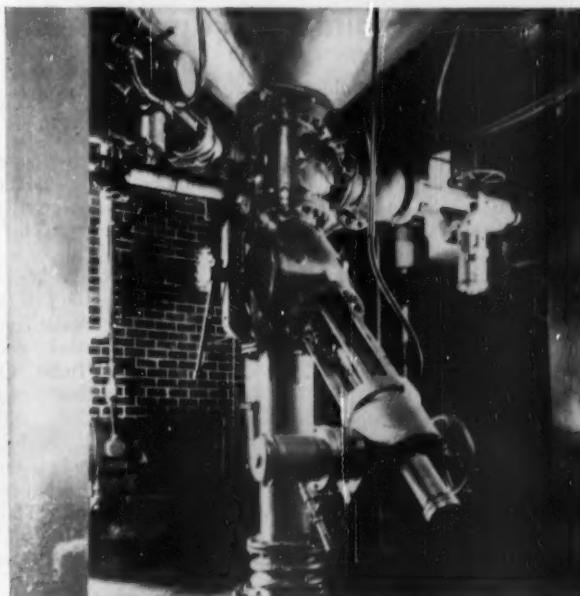


ESCO Log haul equipment includes 480 ft. of $1\frac{3}{4}$ " by $2\frac{1}{2}$ " by 8" manganese chain with 14" wide 16" long ESCO saddle link log haul chairs on $6\frac{2}{3}$ ft. centers and a 7 tooth log haul drive sprocket with replaceable tooth rim. ESCO conveyor equipment includes alloy 12M integral tooth conveyor sprockets, 24 inch heavy duty saddle link flights and 30 inch regular duty cast steel saddle link flights.



View of digester floor shows ESCO 10 inch angle valves cast of alloy 45 (an alloy developed by ESCO for pulp mill service). Fittings between digester neck and valves were also supplied by ESCO.

**... From Log Haul
to Digester Floor
ESCO is proud to be
in the picture
at Ketchikan**



Bottom view of digester with ESCO (alloy 45) 14 inch motor operated dump valve, liquor filling and liquor circulating valves and fittings.

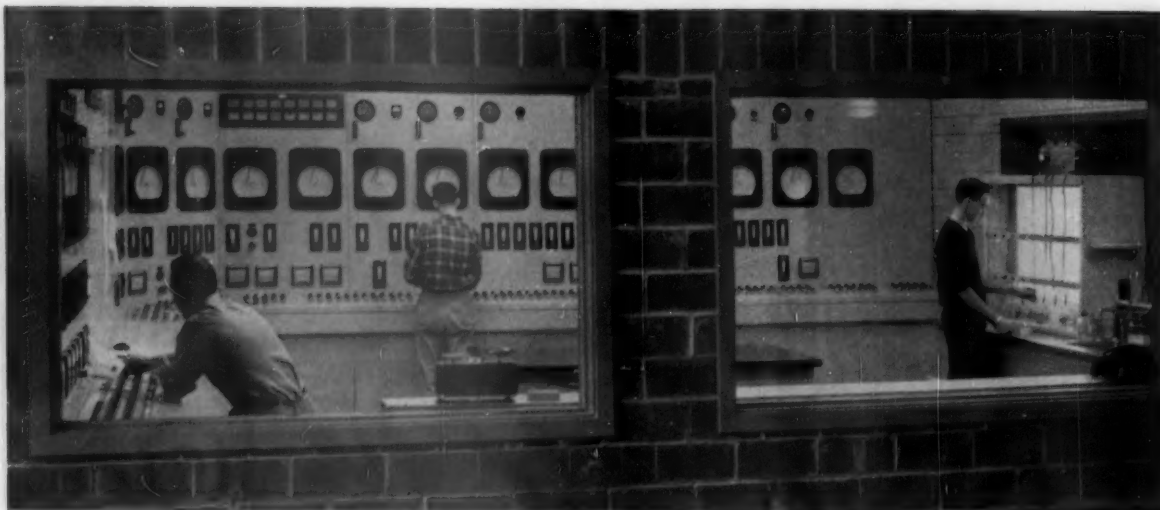
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ONE OF MOST COMPLETE CENTRAL CONTROLS FOR BLEACHING AND WASHING

Ketchikan Pulp's bleaching control board on far wall, extends around on wall at left. Red liquor washing board is on wall at

left. Instruments are Foxboro. Pan-alarms are used. Skyline Electric & Mfg., Seattle, made panels.

Magic Word Today Is Automation

Ketchikan mill use of automation and instrumentation is shining example from one end to another

• The magic word in industry today is automation. As commonly used, it means a system which provides both automatic control and operation of machines. It means more than instrumentation, which, in a narrow sense, might be only the recording of process flows and results. Industrialists today talk more and more about automation, for to them it means reducing costs, increasing uniformity and quality, eliminating monotonous, disagreeable and, sometimes, back-breaking hand labor.

If there ever was a mill built in the pulp and paper industry which is a shining example of automation and instrumentation it is Ketchikan Pulp Co's mill. Virtually every flow, every movement of materials, from one end to another of this big mill, has a push-button—or if it hasn't got a button or some such device, it is set in motion by electronic devices or contact switches.

On several tours of the operation, a PULP & PAPER editor decided it would take a careful observer to find any old-fashioned propelling or handling methods still in use.

Ketchikan Pulp seems to have gone "just about as far as you can go," to quote the tuneful ditty on Kanas City, and that is a long way from "the good old days." Those old days seem pretty

terrible in comparison.

PULP & PAPER counted no less than 20 different central operations control boards operating woodroom, filter plant, boilers, turbines, acid plant, evaporators, digesters, washers, bleachers, screens, stock movement ahead of machine, Fourdrinier and dryer sections, and the finishing end.

At one end is a completely last-word automatic "no-man" filter plant. At the other end is one of the trickiest, Rube Goldbergish baled pulp cutting, pressing, wrapping, tying, stacking and moving set-ups in any mill. Right alongside it, one just as ingenious for easy handling of the big 202-in. pulp rolls, usually literally moving and lifting them with one finger! Here in finishing is where contact switches and electronics have a field day.

"When all conditions are right, this mill just about runs itself," Erik T. Ekholm, director and operations chief, told PULP & PAPER, but he quickly added: "But to operate a mill like this, an intelligent, well-trained crew is absolutely necessary."

One interesting feature is how some of the instruments and controls for certain stages in the operation have been engineered so that they can be in the same control room with those of another closely related operation.

For example, one of the most complete central controls ever built for a bleach plant is in the same glass enclosed room with the control board for red liquor washing. Similarly, acid plant and evaporator plant share one room, strategically placed between them.

MANY NEW AUTOMATIC FEATURES—One of the most interesting and thorough examples of automation is in the wood preparation plant where three control boards take care of moving, barking, sorting, breakdown, chipping and screening of giant logs up to three or four feet in diameter. It is a far cry from the old wood plants of the west where hand laborers with peavies, axes, etc., had to be stationed almost elbow to elbow in many areas, doing dangerous work.

One of the new features in the Ketchikan mill is that virtually all stock flows are measured through fabricated stainless steel venturis, and in nearly every case the flow is controlled by automatic stainless steel butterfly valves. Instead of venturis, conventional practice has been the use of overflows or headboxes. All the various valves for the 6 digesters, except only one, the dump valve, are remotely controlled, and this marks a notable advance in digester operation.

Another notable innovation is an automatic space-saving hypochlorite bleach liquor making system, making unique use of an oxydation-reduction potential set-up, instead of big cumbersome storage tanks, the usual method.

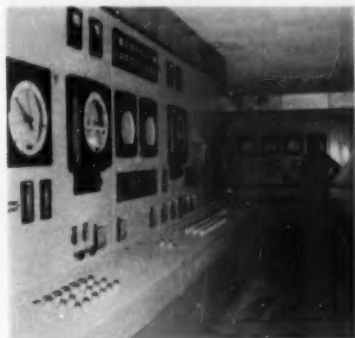
These and many other examples of automation and of instrumentation are described in detail in the various sections of this Ketchikan story in this issue of PULP & PAPER.

One point of interest is that in all this extensive use of central controls, there is not a single instance of graphic panels. An explanation offered was they were not needed in operations that stay almost the same day in, day out. Instruments were laid out in the same process sequence as equipment, but no graphic display was used.

Much planning, however, went into panel board layouts. The majority of process instruments were supplied by Foxboro. Minneapolis Honeywell has many instruments, including its new Electroniks for recording. In power plant, Bailey Meter instruments predominate. Hagan Corp. and Taylor are in the filter plant. Most automatic valves, particularly in the pulp mill, are from Esco. Continental butterfly valves are also in use in some areas. Special stainless valves by Crane Co. and the 3- and 4-way valve specialties of DeZurik are seen.

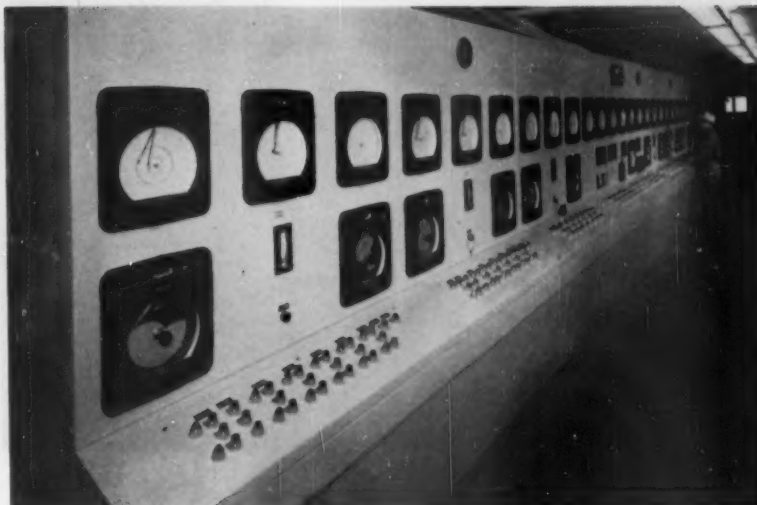
All the panels were supplied by Skyline Electric & Mfg. Co. of Seattle, and they were designed by Puget Pulp and Ketchikan Pulp engineers and were piped and wired under their supervision.

On all the boards are Panalarms, in some cases a half dozen or more. Made by Panellit Co., these warn of any disruption or stoppage of process. Panalarms are a visual aid to operators, so they quickly know what is



AUTOMATIC TO THE "NTH" DEGREE

Central control was really achieved here where acid plant controls are at left, evap plant at back. Brown Elektronik recorder for burner gas temperature at left. Next to it is Leeds & Northrup Speedomix for burner gas concentration. Foxboro units show at center of panel.



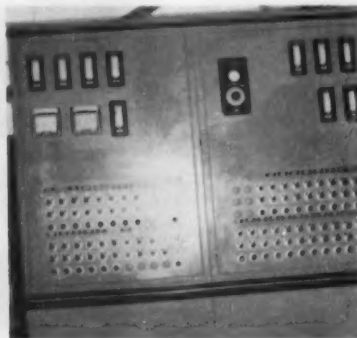
JUST ONE OF A SCORE OF CENTRAL REMOTE CONTROL BOARDS

This is the control and operations board for the 6 digesters at Ketchikan Pulp Co. A feature here is that all various valves for digesters except dump valve, are remotely controlled. Foxboro provided the instruments and Skyline Electric & Mfg. Co. fabricated all panels. Puget and Ketchikan engineers designed them and supervised intricate piping and wiring. Panalarms, made by division of Panellit, is shown at top middle of this board.

happening under abnormal conditions.

Fully a year before this mill started up, training of its instrument crew began. Even before this, plans were made by Art Damman, formerly with Foxboro and Bristol, who engaged as instrument engineer for Ketchikan, and Ivan Campbell, of Puget Pulp. A year before the start up, three instrument engineers went into training in Bellingham under Mr. Damman and Mr. Campbell.

Literally miles of tiny tubing, efficient use of air impelling and the other complicated but meaningful lights, bells and buttons that a layman sees in this untra-modern mill mean reduction of man-hours and less costly operations.



Push buttons and lights are here for every flow from bleach chests to point where stock goes to big Rice Barton machine. This is opposite headbox. Instruments are Foxboro except in top middle, on larger black cover, is DeZurik throttling control for stock.

Labor Agreement Includes Wage Differential

Ketchikan Pulp has concluded a labor contract with the AFL Pulp, Sulfite and Paper Mill Workers union which includes the same contractual obligations as the agreement between U.S. Pacific Coast mills and AFL unions with the addition of a wage differential to accommodate for a higher cost of living in Ketchikan. Many necessities, such as meats, eggs, etc., and other items are shipped 700 or more miles from the States.

Cheaper wood and high quality and value of the mill's pulp are offsets to higher wages and transportation costs.



Even 14 Lindblad screens for stock ahead of blending and bleaching have their own central controls here. And they can be seen from big glass window through which this picture was taken. Panalarms, made by Panellit Co., are above Foxboro instruments.



WOOD PREPARATION

Minimum number of men are needed to operate barking, break-down and chipping plant

• About 90% of log scaling is done at the mill. Bundles and cribs of logs towed from camps are broken down and scaled at the mill. Those coming in flat rafts are not.

Virgin timber provides the wood supply and these are huge giants of logs. Hemlock and spruce are separated in the big pond and run separately. A raft is pulled into the log haul slip by a Skagit hoist, also used to raise the apron.

An Esco manganese chain is 480 ft. long—240 ft. to the top of the towering all-steel log haul and the rest for return. Through a triple reduction Western Gear reducer a variable speed Westinghouse 150 hp high torque, high slip squirrel cage motor powers the haul and its huge burdens, some of which are over half the length of the log haul itself. Sumner Iron Works provided log deck and transmission equipment, as well as all equipment in the wood room, including saw frames, barker, chipper, band mill, etc. This includes transfers, loaders and kickers and chain in the wood mill. Westinghouse provided all motors and Western Gear all the reducers.

A 108 in. cutoff saw furnished by Disston first reduces the logs to maximum 22 ft. length for the barker. The "Bellingham type" hydraulic log barker built by Sumner Iron Works—so named because it was first developed at Puget Pulp in Bellingham in the middle '40's—takes any diameter log and it is a "cradle type" of barker, facilitating barking of uneven or even freakish shaped logs. The record shows this is now the most popular type of whole log barker in the West. But Ketchikan has a new

type of nozzle, covering a wider log surface. It strikes the log from overhead with 1400 psi pressure, while the log is revolved on a cradle of two parallel rows of toothed wheels, six wheels on each side. The new Ketchikan nozzle can be turned to strike perpendicularly or at an angle. A pushbutton raises or lowers the nozzle, according to log thickness.

One operator in a heavy glass-enclosure uses an airplane control wheel to produce control intelligence into magnetic amplifiers. A 1200 gpm Bingham barker pump is driven through a Western Gear step-up unit by a 1250 hp 1200 rpm Westinghouse synchronous motor. There is a second standby Bingham barker pump duplicating the one in use, easily swung over in event of breakdown.



REDUCES LOGS OVER 30 INCHES DIAMETER

Sumner 10 ft. Bandmill breaks down logs too big for chipper. Sumner "No-Man" log carriage is push-button operated.

NEW NOZZLE COVERS WIDER LOG SURFACE

Sumner Iron Works "Bellingham Type" hydraulic barker, developed at Puget Pulp, is used. Operator in heavy glass enclosure, uses airplane control wheel to produce control intelligence into magnetic amplifiers.

Logs over 30 in. diameter go to a 10 ft. Sumner bandmill for break-down, others going direct to the big 6 knife, 153 in. Sumner chipper. The middle-of-room control table with buttons for every movement in the break-down area gives an early sample of the high degree of automatic or instrument controls in this mill. This central control table takes logs around all the way to the bandmill and then onto the chipper from the storage deck after the barker. Bandmill is driven by a Westinghouse 300 hp, 300 rpm, synchronous motor of inverted type with rotor mounted on the arbor of the lower wheel. A walkway completely around this part of the woodroom also gives as complete a view of all operations as the operator himself has at the middle table with no pillars obstructing the vision. A Sumner "no-man" log carriage for the bandmill is pushbutton operated, and the carriage drive is a geared type with magnetic amplifier control.

The 277 rpm Sumner chipper has

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in the Industrial Development
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**Sumner is exceedingly proud to be the supplier of
ALL THE WOOD ROOM MACHINERY for Alaska's first pulp mill.**

Major Sumner Machinery installed includes:

Sumner Bellingham-type Hydraulic Log Barker
108" Log Deck Cut-off Saw
Motor Driven Drag Saw
10 Foot Band Mill
No-man Carriage
153" Whole Log Chipper
Chipper Feed-in-device
4 - Standard 7'6"x18'0" Chip Screens

36"Rechipper
2 - No. 45 All Steel Refuse Hogs
Nigger 10"x12"x6"
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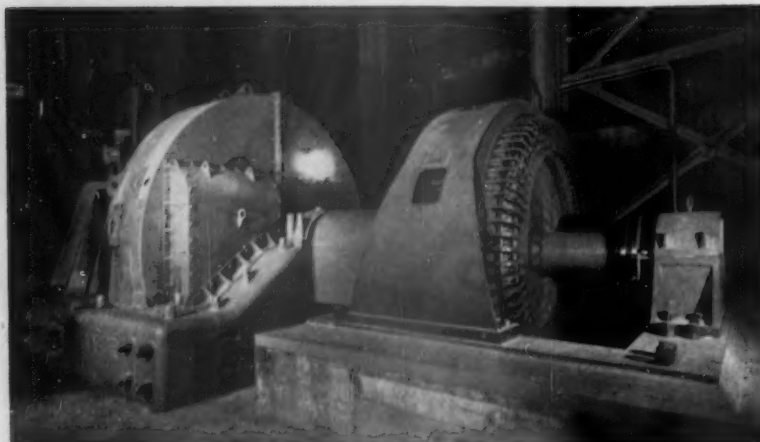
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- Steel, Iron, Bronze, and Brass Castings



CHIPS FROM WHOLE 22 FT. LOGS IN SECONDS

Sumner 153 inch chipper, with 6 knives, is driven by Westinghouse 1500 hp 80% power factor synchronous motor with stator shift.

a 34 in. feed spout. A direct drive is provided by Westinghouse 1500 hp 80% power factor, 2300 volt synchronous motor with stator shift. Concrete foundations for chipper and drive are of considerable depth, and in the log chute, a contrivance partially lowers the log to the chipper mouth, so it does not fall the entire depth.

There are four standard Sumner 7½ by 18 ft. vibrating chip screens and a 36-in. Sumner rechipper for

final processing in the woodroom.

A MAJOR CONVEYOR SYSTEM—An extensive system of Link-Belt conveyors with high strength Goodrich rayon-fabric rubber belting (the fabric made from woodpulp) and 45° troughed belt idlers is one of the major installations of this type by Link-Belt Co. A multiple strand feeder with Link-Belt chain takes chips from under the chipper and loads the first of three successive 60-in. wide belt conveyors to the five 100 ft. high storage silos. A 60-in. wide reversing shuttle conveyor for distributing the chips is above the silos.

Four silos are for hemlock, one for spruce. Each silo takes about 11 cooks. Below are five Link-Belt 17 ft. diameter rotary plate feeders with two 2-way discharge spouts, where two 30-in. belts, one for spruce and one for hemlock, collect chips. A 36-in. chip blending belt takes chips to a Link-Belt double strand distributing flight conveyor through L-B. rotary vane feeders to the chip screens. Accepted chips are taken on a series of three 36-in. belts, total length about 1,300 ft., to the steel and concrete rectangular surge bin, which is over 50 ft. high. It takes about five cooks. An automatic motorized Link-Belt tripper distributes chips at the top of the bin. Below the bin is a double row of Link-Belt rotary vane feeders, 12 in. each row, for withdrawing blended chips to two 36-in. wide belt conveyors, which feed one 48-in. belt, carrying chips to the top of the digesters. All outside conveyors for chips are carried on steel structures provided by Bethlehem Pacific with transite housing.

With hydraulic barking, there is very little refuse from the wood room. What there is in the form of bark and

sawdust is moved by Link-Belt conveyors, some with Link-Belt combination type refuse chains and others with Esco round link chains, to the hog house. In comparison for the size of this mill, there is very little for a hog house to do, but even here are new types of equipment in addition to the two Sumner No. 45 all-steel refuse hogs. There are a brace of Sweco Engineering separators for bark fines, which are compact, centrifugally operating units. Also there are two American Defibrator presses specially made for dewatering bark for burning. Link-Belt chain conveyors handle the material in the hog house, and a 36-in. belt carries the hogged fuel to the distributing flight conveyor over the boilers.



WOOD PLANT SCENES

(Top) Hoist, at foot of log haul, pulls raft into slip. (Second) 240 ft. long all-steel log haul with Esco chain. (Third) Link-Belt bark conveyor beneath log haul—note how little is waste. (Bottom) A pair of Sweco Separators for bark fines.

46,000,000
gallons per day water
treatment plant with
complete automation
for the new
KETCHIKAN MILL




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We are privileged...

to supply the new mill of Ketchikan Pulp Company with WESTVACO® MgO for their magnesia base sulfate pulping process.

Produced at our Newark, California plant (America's first major commercial plant for the production of Seawater Magnesium Oxide), WESTVACO MgO is made to exact, uniform specifications for most efficient use in this advanced waste-liquor recovery process.

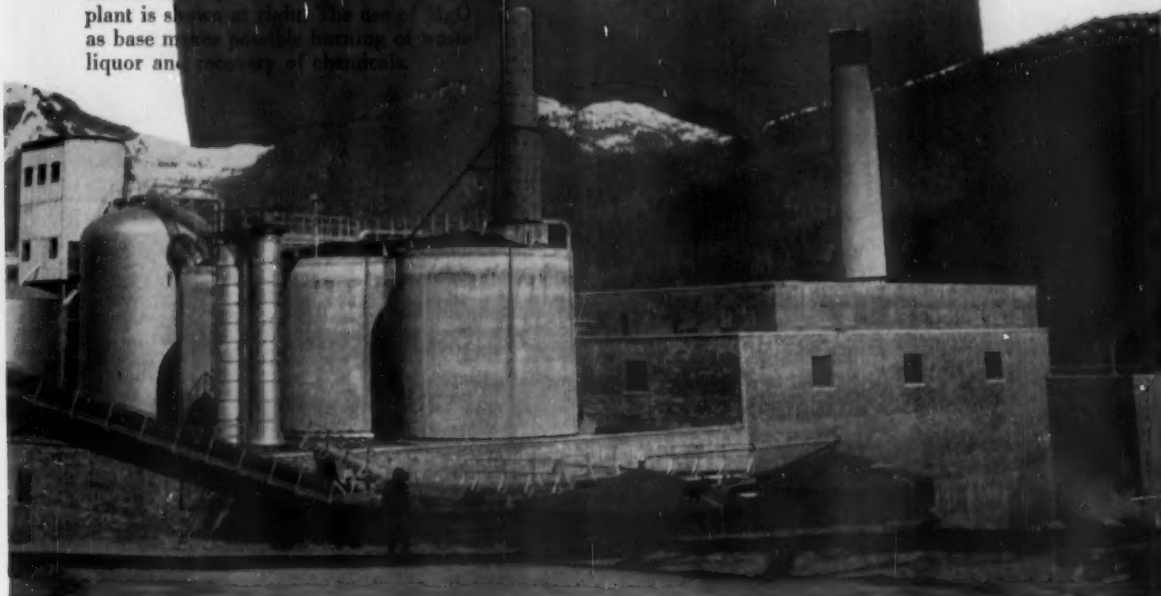
To those contemplating new mills, we offer the benefit of our experience in furnishing WESTVACO MgO to the two mills now using a magnesia-base recovery system.

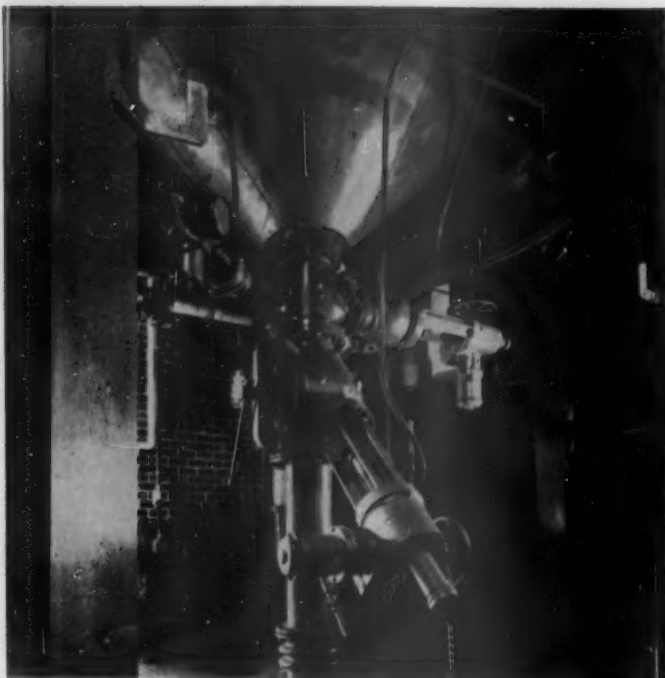


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The Ketchikan magnesia base plant is shown at left, and the power recovery plant is shown at right. The use of MgO as base makes possible burning of waste liquor and recovery of chemicals.





DIGESTERS SIT ON TOP OF DUMP CHESTS

Something new here—these A. O. Smith digesters sit right on top of dump chests. Esco furnished all valves and equipment below digester, except small motor drives for remote operation. Two Stebbins-lined chests are under the 6 digesters, allowing division of pulp.

PULP MILL

Among special features are many valves that are remotely operated and digesters that sit on dump chests

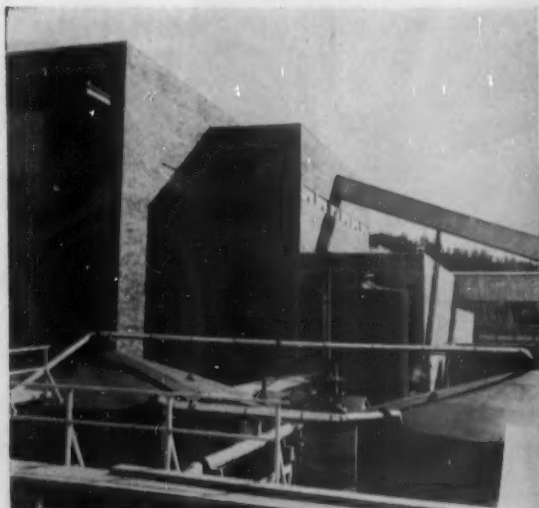
• The pulp mill itself is the dominant structure at Ward Cove, with digesters, accumulators, red liquor washing, bleach plant and pulp screening all under one roof, directly connected with labs and offices by the bridgeway. For that matter, drying,

finishing and shipping are in a connected structure.

The control room for digesters and a single room for red liquor washers and bleaching are on top floors of the two paralleling adjoining sections. The digester building is four floors high;

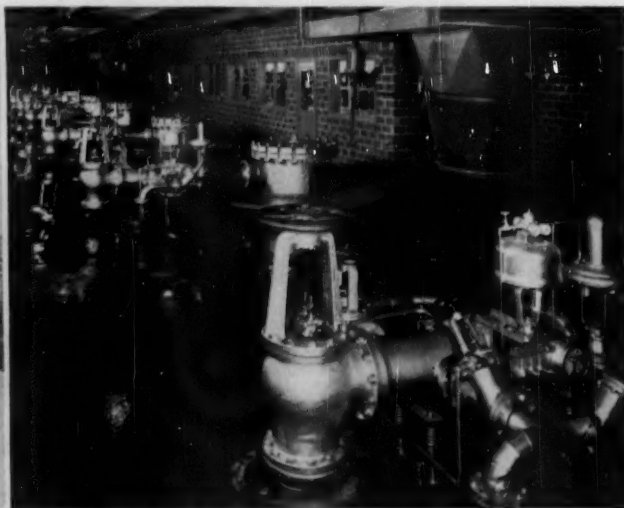
wash, screen and bleach sections are in a 5-story building. While the two sections or two buildings are walled off from each other, one is easily accessible to other through convenient doorways. The combined buildings have man-lifts, one going up, one down; also a large elevator for carrying personnel, materials or smaller equipment.

The digester arrangement is unique in that digesters are set directly on top of dump chests. No pressure is used.



SHOWS RELATION OF MILL DIVISIONS

The digester building is the middle, second highest section, with housed chip conveyor entering above its windows. Highest section at left is bleach plant and red liquor washing building. Lower building to right of digesters is MgO accumulator house.



DIGESTERS HAVE REMOTE CONTROLS

This is 4th floor—operating floor—for A. O. Smith stainless steel digesters. Electric Steel Foundry furnished special stainless angle and Y valves operated by push buttons in control room in background, and also bolts on tops of digesters.

This is the second mill to install the MgO cooking and recovery cycle, using magnesia base instead of the conventional calcium base for sulfite cooking, and therefore the other mill of this type—Weyerhaeuser in Longview—also uses dump chests. Magnesium oxide for both these mills is supplied by Westvaco Chemical Co. But there are variations here, as the entire mill was built new for the process in Alaska for the first time. These six digesters are dumped by gravity into two concrete and Stebbins tile lined chests holding about three cooks apiece. Two chests permit dividing pulp into two types.

Hemlock and spruce can be cooked separately or in any desired combinations. From surge bin blended chips are carried on a 48-in. Goodrich rayon fabric belt to the top of digesters. Over digesters is a Link-Belt motorized reversing shuttle conveyor which feeds the digesters. It is equipped with telescoping discharge spouts and air-operated lid lifters. Automatic chip weighing is provided with Builders-Providence Conveyoflow units.

Digesters are 17 in. inside diameter. They are 58 ft. high. A. O. Smith built them with Lukens cladding and stainless steel all the way through. Type 316L stainless lining is used in the area in contact with liquor, but Hastelloy alloy F lines the vapor area of the domes. The two types are resistance spotwelded to carbon steel backing.

Several valves connected with digester operations are remotely controlled. These are all electrically operated valves supplied by Electric Steel Foundry Co. Esco also supplied the digester circulation systems and heaters. Bingham pumps provide circulation, and most liquor pumps in this mill are Bingham stainless steel custom-made pumps.

Valves for acid filling, for pumping liquor, for top and bottom Esco circulation, for Esco strainer outlet—all these are among the push-button operations.

A cook is usually 6½ hours duration, and each cook makes about 24 tons of pulp. One of the goals confidently to be achieved as a result of this mill's design is an unusually low labor cost per ton of pulp.

The glass-enclosed control room for the digesters extends about half length of the top operating floor and is a Foxboro equipped control board, designed in cooperation with Ketchikan Pulp engineers. All panels are by Skyline Electric & Mfg. Co. Panalarms by Panellit, Inc., which sound alarms for any interruption of process, are on this board as on virtually all others in the mill.

PANALARM "50" ANNUNCIATOR SYSTEMS

NEW functional flexibility with NEW "instrument- type" construction

PANALARM "50" PLUG-IN UNIT—hermetically sealed and most versatile ever developed—simply plugs into chassis to expand system—no wiring—no other connections. Corrosion-proof and suitable for Class I, Div. 2 locations.

Built-in flexibility of PANALARM "50" allows simple change-over to any operating sequence as required by present or future conditions. And, at the same time PANALARM "50" introduces a new instrument-type annunciator construction—adding to the long-term dependability of the entire system.

CABINET is substantial gauge steel with sturdy chassis and sub-door arrangement. It is pre-wired ready for installation, yet completely flexible without re-wiring.

PANALARM ANNUNCIATOR SYSTEMS are self-contained with either illuminated name-plates or bullseye visual signals. Both the audible signal and acknowledgment button are common to the entire system.

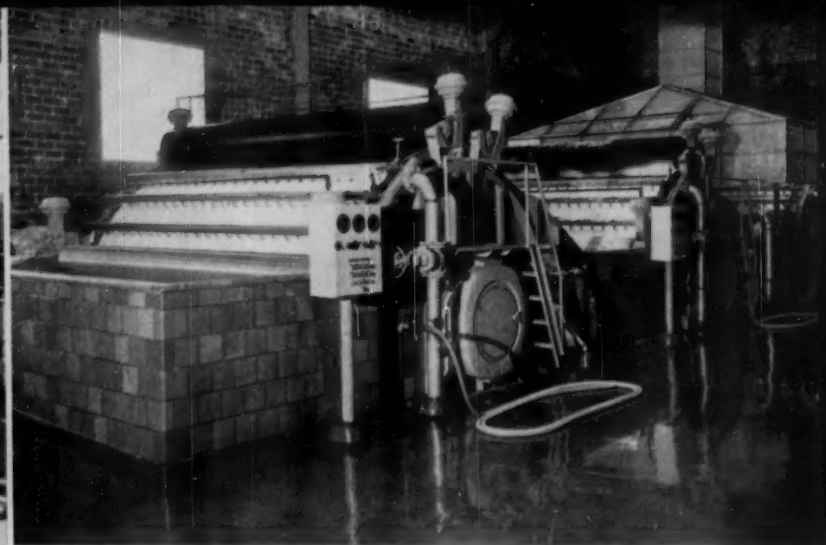
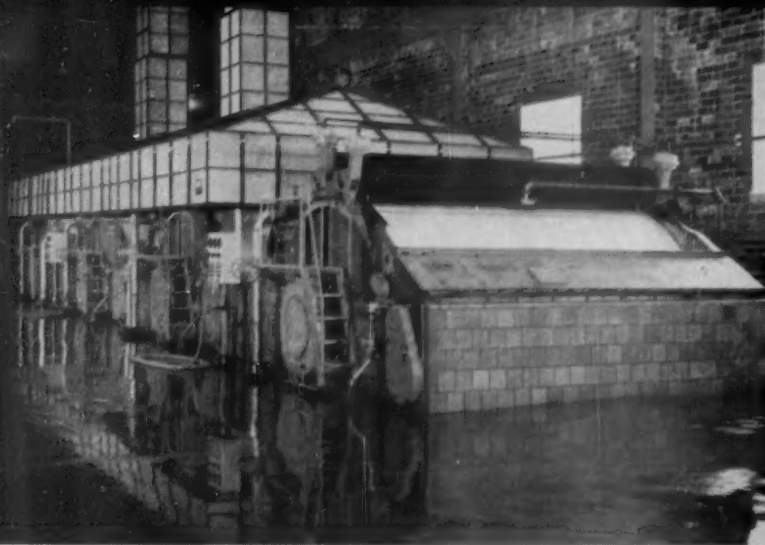
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PANALARM

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HERE ARE SEVEN STAGES OF BLEACHING AT KETCHIKAN

In view at left, process starts near door (where incidentally, big washers can be easily hoisted out to ground level far below, or brought in that way). Stages in picture at left: Chlorination, caustic and first and second hot caustic extraction.

In view at right—First and second hypochlorite stage and acid soak. All vats lined by Stebbins, all washers (11½ by 16 ft.) and other equipment for bleach plant by Impco, gears by Western Gear, drives by Westinghouse. This hood Transite, by J. O. Ross.

WASHING-SCREENING-BLEACHING

Virtually every flow is remotely controlled in one of most modern plants of its kind in industry

• The washing and bleaching operating floor is one of the outstanding "showplaces" of this mill, efficiently laid out and with maximum visibility and an unusually high ceiling. All five floors are completely ventilated and heated.

At one end of this brick and concrete structure's top floor is a large 20 by 15 ft. doorway. An Ederer crane and a crane-way extending out through the opening will permit easy removal or entry of the big stainless steel Impco washers, used in both bleaching and washing process. They can be lifted to or from r.r. cars on tracks which are 110 ft. below.

Briefly this is the flow of the process, as it now operates at Ward Cove. Pulp from digester dump chest is pumped to the four individual deknotters and then pass over four stages of washing. From here it goes to two high density storage tanks, outside the building. These are built of slip-form concrete with Stebbins tiled lining and each holds 75 tons.

A new innovation is a Goodrich-designed 30 in. rayon-rubber belt conveyor to high density storage which slides in a water lubricated stainless steel trough. It is simpler and fits into design better than the conventional screw conveyor.

From storage, pulp goes to a series of 14 Lindblad screens on a floor below the bleach and red liquor washers. This is the first time in any mill that primary, secondary and tertiary Lindblad screens are all used. The Lindblads, made by Impco from Swedish design, are high density vibrating screens operating at about 2% consistency, with controlled ro-

tation on the screen basket. They are made in 40 in. baskets, and operators say they will do several times more screening in a small area and in given time than conventional flat methods.

There are four Impco flat screens used here as reject screens.

From the Lindblads the pulp goes to two Impco valveless deckers and then outside the building again to a 75-ton capacity steel screened stock blending chest built by Chicago Bridge, and Neoprene lined by Chemical Construction Corp. It has James Brinkley Co. agitators.

Back goes the pulp to the bleach plant. There are seven stages of bleaching: Chlorination; caustic soak; first and second hot caustic extraction; first and second hypochlorite stage; and acid soak.

Then, to two Chicago Bridge steel bleached stock storage chests of 50-tons capacity each, also Neoprene lined, and with Brinkley agitators. These are next to the screened stock chest previously mentioned with connecting walkways. From here stock goes to the pulp dryer room.

EQUIPMENT IS DESCRIBED—All washers, mixers and thick stock pumps, etc., for bleaching and washing were furnished by Impco, and the design of this entire bleaching, screening and washing area was a job done in collaboration by Ketchikan Pulp, Puget Pulp and Impco engineers. Impco mixers are used with all stages of bleaching after the first two and thick stock pumping with the third and fourth hot caustic stages.

All washers on both sides are 11½ by 16 ft., and stainless steel of course, and all Impco equipment touching stock is stainless. J. O. Ross Engineering provided stainless steel hoods on the red liquor washers and deknot-



RED LIQUOR WASHING IS DONE HERE

Four individual deknotters at right end are followed by four stages of washing. Impco washers are driven through Western Gear reducers by package type Westinghouse motors. Vats are by Stebbins and hood in stainless steel by J. O. Ross.



Announcing Increased Services For Wood Pulp Industry in West

A. H. Lundberg who has been active since 1927 in the supply of equipment and engineering service to the Pacific Coast industry announces his association with Tore Ahlen, another veteran, in the opening of a new office in Vancouver B. C. to bring closer representation in Western Canada for many of the same well established companies whose processes and equipment have gained wide acceptance in pulp manufacturing. Len Lundberg with a number of years experience in pulp mill operation and since 1951 associated with his father in the Seattle office is an officer in both companies. Mr. Ahlen will make his headquarters in the Vancouver office.

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Circular and Hand Saws



At the Ketchikan Pulp Mill (left) G&K Research Heavy 3-Ply Leather Belts drive the Couch Roll, First, Second and Third Press, and the Pre-dryer (above).

G&K Research® Leather Belting specified for more production-power in the new Ketchikan Pulp Mill

G&K RESEARCH HEAVY 3-PLY LEATHER BELTS WERE SPECIFIED FOR THE FOLLOWING:

Machine Section	Belt Width
Couch	8 in.
First Press	6 in.
Second Press	10 in.
Pre-dryer	10 in.
Third Press	10 in.
Dryers — 7	12 in.
Breaker Stack	10 in.
Air Dryer	6 in.
Draw Rolls	6 in.
Reel	10 in.

The new \$50 million plant of the Ketchikan Pulp Company at Ward Cove, Alaska, is perhaps the most modern pulp mill in the world. The engineers specified Graton & Knight Research heavy 3-ply leather belts exclusively — for 16 drives.

G&K Research Leather Belts have a reputation for delivering *more production-power*, with low maintenance and long life. Ketchikan's confidence in the reliability of G&K leather belting is attested by the fact that the mill is situated where spares are not easily obtainable — for Ward Cove is 670 air miles from Seattle.

You, too, can rely on Graton & Knight Leather Belting to give your machines more production-power... and you can get *prompt* service. Send for Belting Catalog No. 101.

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GRATON & KNIGHT
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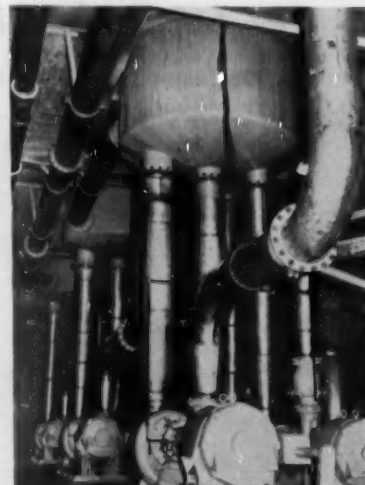
WORCESTER, MASSACHUSETTS

World's Largest Manufacturer of Industrial Leather Products

ters and Transite hoods for five bleach stages—the two hypochlorite stages required no hoods as they emit no fumes. Stebbins built all tile vats for washers, seal boxes and did other tile work in this area. Stebbins lined a large chlorination tower with Saran but all other reaction towers have conventional tile linings for services intended.

All washers are driven through Western Gear reducers by 20 hp adjustable voltage packaged type AV Westinghouse motors. Stainless steel is used in all pumps of Bingham-make. And there is an extensive amount of stainless steel piping in the areas below the bleaching-washing operations, mostly fabricated by Northwest Copper Co., and Alaskan Copper Works, including some unusual big curved fittings.

A new feature in this bleach plant is a compact, automatic and continuous bleach liquor making process. It makes all the hypochlorite bleach liquor used in the two hypochlorite towers. A small compact tower is used for the purpose. Dilution of 50% caustic is accomplished continuously using a conventional specific gravity control system. The amounts of chlorine are regulated by oxidation reduction control. This installation for a continuous system is many times smaller than what has been required in the past for conventional batch systems—usually several reaction tanks and large storage tanks, for the same size operation. All this requires is a 2000 gal. storage tank. The Ketchikan hypochlorite system is one of the largest continuous systems yet installed and is the most extensive

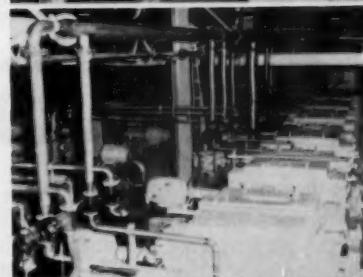
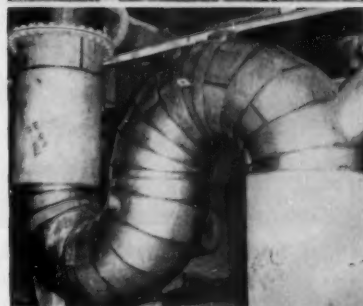
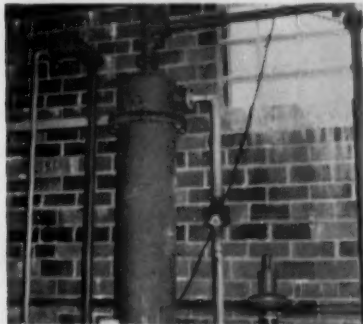


STAINLESS STEEL GLEAMS IN BLEACH PLANT

At Ketchikan mill are 100 Bingham pumps of stainless and here are several in bleach plant, surmounted by stainless piping fabricated by Alaskan Copper Works.

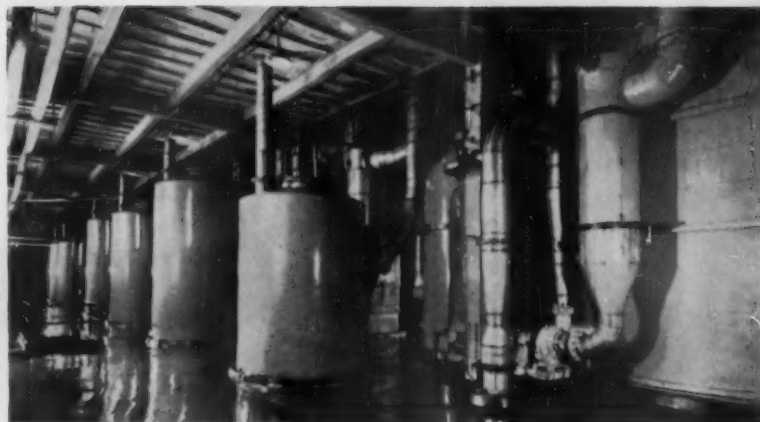
application to date of this controlled method.

Another unusual feature of this bleach plant is that Hooker Electrochemical Co. ships chlorine in tank cars all the way from its Tacoma, Wash., plant, an 800-mi. barge voyage. It also ships the 50% caustic soda in tanks below deck. The caustic



VIEWS IN BLEACHING AND SCREENING AREAS:

(Top) This small compact tower is used for new automatic, continuous hypochlorite bleach liquor making.
(Second) Giant S fitting in stainless steel by Northwest Copper Works.
(Third) Lindblad screens—14 of them—used for primary, secondary and tertiary screening for first time in any mill.
(Bottom) One stock blending and two bleached storage tanks by Chi. Bridge are Neoprene lined by Chemical Construction, have Brinkley agitators.



SEAL TANKS IN BLEACH PLANT

These are seal tanks for bleach washers at Ketchikan. Stebbins Engineering built all tile vats for seal boxes and washers. It lined large chlorination tower with Saran rubber.

soda is discharged by being pumped to three 150,000 gal. storage tanks.

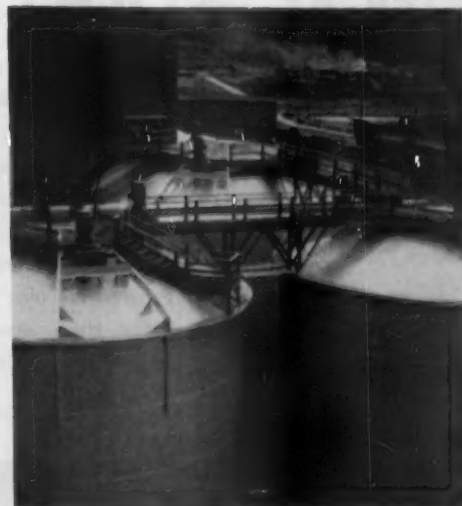
It is the first time chlorine and caustic soda were shipped so far by this method. In fact, barge shipments of any distance were first made only recently to British Columbia mills. Hooker participated in design of Ketchikan's unloading equipment installed outside and in the bleach plant, with most modern safety techniques used. Chlorine from tank cars to points of use is handled in either

of two alternative duplicate systems.

The control room for both red liquor washing and bleaching has been mentioned. These panels are completely Foxboro-equipped. It is notable that they are in a single room. Controls are on two connecting inside walls with both of the other connecting outside walls glass-paneled and providing excellent visibility for both operations. The bleach control buttons and recording instruments occupy all

Continued on page 122

KETCHIKAN PULP selected BRINKLEY EQUIPMENT



- ★ COUCH PIT AGITATOR
- ★ MACHINE CHEST AGITATORS
- ★ AGITATORS FOR BLEACHED AND UNBLEACHED CHESTS (PICTURED)
- ★ AIR DRYER

JAMES BRINKLEY CO.

417—9th Avenue South

Seattle 4, Wash.



32 ton press rolls

rubber covered by **STOWE-WOODWARD**

65,000 lbs. is about four to five times the weight of most press rolls . . . but that is the specification to meet the unusual operating conditions of the Ketchikan Pulp Company's new machine.

Well aware that covering press rolls of such unusual construction demands both skill and equipment far beyond the reach of most roll finishing plants, Rice Barton Corp., the machine builders, came to Stowe-Woodward for these three giant press rolls . . . 44" x 208".

63 more rolls were also covered by Stowe-Woodward and its west coast associate, Huntington Rubber Mills, Inc. to complete the roll requirements for this new Ketchikan operation.

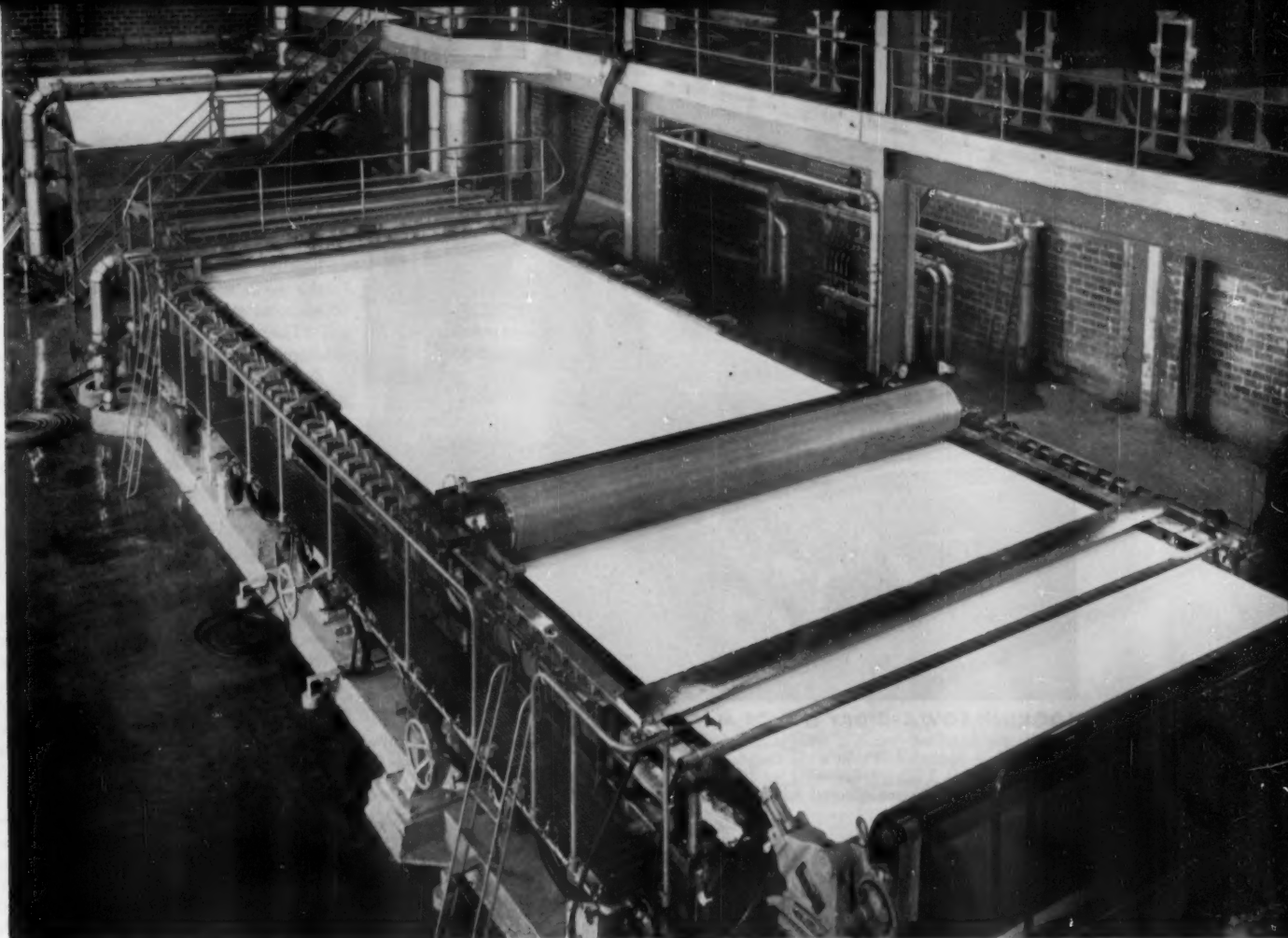
RUBBER ROLLS WITH A REPUTATION



STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN - NEWTON 64, MASS. - GRIFFIN, GEORGIA



A HIGH QUALITY 202-IN. SHEET IS FORMED

Wet end of Rice Barton machine especially designed for viscose, acetate and fine market paper pulps. Two Impco deckers are in background. Many of 560 Bauer (Centri-) Cleaners are

seen along wall of mezzanine and machine floor. Huntington Neoprene-covered lumpbreaker roll in lower right corner; Stowe Woodward covered table rolls. Note stainless piping and stuff-box by Alaskan Copper.

MACHINE ROOM

New gadgets are feature of Fourdrinier dryer which was especially built to do a special job

• One of the most prodigious examples in the mill of Alaska's new industrialization is, quite naturally, the massive and intricate Rice Barton Fourdrinier pulp drying machine. The machine, over 20 ft. wide (208 in. wide) and 358 ft. long, with its shimmering Fourdrinier and multitude of neatly integrated rolls, large and small, is the wonder of wonders to Alaskans. From a 117-year-old New England machine building corporation, over twice as old as Alaska, the territory, there never before has been anything like the machine in the Northland.

It dominates a 460 ft. long room, and yet, with all its hugeness, is a precisely operating piece of machinery, producing chemical pulps of high quality and uniformity.

The pulp is given another dirt-particle removal treatment by four Impco Lindblad screens as it is pumped to this room from the bleached stock storage chests. These are on a mezzanine floor above the machine. The Lindblads are identical to the 14 Lindblads used ahead of bleaching,

being high density rotating, vibrating machines.

Next, the pulp is even more meticulously cleaned through a battery of Bauer cleaners (formerly known as Centri-Cleaners). Mostly on the mezzanine, with some on machine floor, there are 560 of these slender tubular cleaners in all.

Pulp then passes over two Impco 11½ ft. diameter deckers, removing most of the water, and then on to a DeZurik consistency regulator and to a stock chest, ahead of the machine. Considerable stainless steel piping and a stuff box, all fabricated by Alaskan Copper Works, are seen ahead of the machine. At the stuffbox, a DeZurik stock valve regulates weight.

Opposite the head of the machine is a control panel board where numerous buttons and lights control and record every flow from bleach chests to the point where stock goes onto the machine. Foxboro provided instruments except for the DeZurik throttling control at top middle of the board.

Below this area, ahead of the machine, is a specially built Bingham stainless steel fan pump of 15,000 gpm, designed with a by-pass so that smaller quantities can be served to the machine. It is provided with double suction and double discharge and exceptionally smooth flow to the headbox. Of about 100 Bingham pumps in this mill, all are stainless steel except one water pump.

MACHINE MADE FOR ITS JOB—

Rice Barton designed the machine especially for viscose and acetate pulps, although high quality paper pulp is also made. Main components are the one-pass flow spreader type headbox and slice, removable Fourdrinier with patented duplex breast roll, the press section, the pre-dryers and stack dryer section, the breaker stack, new Brinkley air dryer, draw rolls and horizontal reel.

There are 102 dryers so constructed that capacity can be increased by 50%, by building up the 16 stacks without adding length. Oiling, ventilating and condensate systems and drives are designed to accommodate the additional dryers.

The flow box and slice, entirely stainless steel, were specially designed to operate at low consistencies. Con-



LOOKING TOWARD DRY END OF MACHINE

Rice Barton machine starts off with stainless steel flowbox and slice, controlled overflow which can be maintained over wide range. Fourdrinier wire is 110 ft. long. Note a pre-dryer section, of 5 dryers, followed by 102 dryers, both under Svensk Flakt aluminum hoods. Stowe-Woodward covered 3 heaviest press rolls ever rubber covered—65,000 lbs. each.

trolled overflow provides for constant flow, which can be maintained over a wide productive range. Stock flows into the box through a series of Rice Barton designed pinch valves, having a shape which spreads the stock as it enters the mixing chamber.

A 202-in. pulp sheet is formed over the machine, as water is removed successively by gravity, suction, pressing and evaporation.

The Fourdrinier wire is 110 ft. long. Suction boxes are oscillated by means of an advanced design hydraulic oscillator, with widely variable speed, easily controlled by a flow control valve. Table roll bearings are of a Rice Barton patented type, adjustable vertically and horizontally. All 32 table rolls were rubber covered by Stowe-Woodward. Stainless steel has been used extensively throughout the Fourdrinier. The table roll section is arranged for shaking by a Rice Barton "zero error" straight-line shake head. A Sinclair dandy roll is mounted over the Fourdrinier, followed by a lump-breaker roll which was Neoprene covered by Huntington Rubber Mills.

The wire stringing device is totally enclosed in the ceiling so no part is exposed during operation.

The press part consists of a first suction and two plain presses. All plain press rolls are constructed from a special alloy of nodular iron, designed for minimum of crown. Beloit supplied the suction couch and first rubber-covered suction press roll. Youngstown Welding & Engineering covered the top second and third press rolls with stainless steel.

The third press was designed by Rice Barton for maximum pressure of

1000 lbs., each roll weighing 30 tons. Pressure on all presses is supplied through a high pressure hydraulic system, with Vickers controls. The operator can obtain nip pressures from zero up to 1000 lbs. by merely manipulating two control valves.

An added feature in this system is protection against power failure while rolls are in a raised position. If failure occurs, rolls drop at a very slow rate. Another feature is that the system is arranged to have complete flexibility should a wad or foreign object pass through the nip of the press roll. The first press is equipped with a broke conveyor discharging into a chute back of the machine. A scale for

maintaining accurate basis weight is located between the third press and the dryer section, and controls consistency of stock coming to headbox.

There are five pre-dryers, 5 ft. diameter each, before the regular dryer section. Pre-dryers and stack dryer section have specially designed dryer bearings of plain type.

There are 56 dryers of 48 in. diameter in 8 stacks ahead of the breaker stack and then 46 dryers of similar size in 8 stacks following it.

The breaker stack in the dryer section is Rice Barton design containing chilled rolls of a special alloy, each 48½ in. diameter, each weighing 43 tons. This unit is designed for a nip pressure of 1000 lbs. and can be controlled by operator from zero to 1000 lbs. A minimum crown is required to operate at these nip pressures. A special metering device is incorporated in the press to allow for the correct conditioning of the pulp.

A DETECTOR FOR MOISTURE—

At the end of dryers a Minneapolis-Honeywell moisture detector continuously reads moisture content across the sheet. Here also are a pair of 30 in. diameter chilled iron draw rolls which serve to hold the sheet tight against dryers as well as to continuously feed the sheet to reel. The hydraulic system controlling these rolls allows the operator flexibility in controlling the caliper should some correction be needed at this point.

From draw rolls the pulp is wound up on a Rice Barton fully automatic horizontal reel. The transfer of the roll from starting position to wind-up position and return of the starting arm takes place automatically. Maxi-



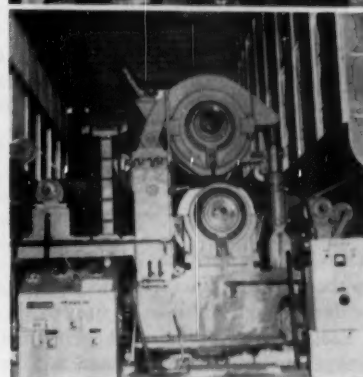
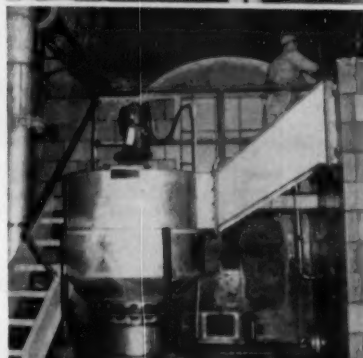
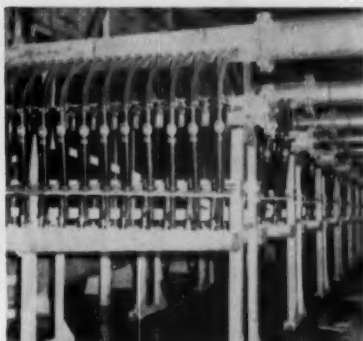
NEW EQUIPMENT AT DRY END OF 358-FT. LONG MACHINE

Feature of this end of Rice Barton machine is James Brinkley Co. 12 ft. Air Dryer, designed by Meder Johnson, just this side of long Flakt aluminum dryer hood. New dryer blows air into hood and pulls air through hood, giving more and dryer air for drying sheet. From draw rolls pulp is wound on fully automatic Rice Barton reel. Maximum roll size (16 tons—90 in. diameter).

imum size of roll wound is 90 in. (about 16 tons).

A tail cutter, attached to the reel so a new roll can be started with minimum loss of pulp, only has to be set in motion—the rest of the operations are fully automatic.

A Rice Barton mechanical drive consists of both single and double reduction hypoid units, having pneumatic clutches and remotely controlled



ON PULP "ROUTE"— JUST AHEAD OF MACHINE

(Top) Closeup of Bauer Cleaners (formerly Centri-Cleaners) Tubular organ-like instruments—560 in all are in machine room—meticulously clean Ketchikan pulp.

(Middle) From Bauers, pulp passes over two Impco deckers where man stands, then to big DeZurik consistency regulator on floor, then machine stock chest.

(Bottom) Third press section is designed by Rice Barton for maximum pressure of 1,000 tons with rolls of 30 tons each, among largest ever made. Two valves apply pressure hydraulically.

belt guides. Draw rolls and reel have a slack take-up arrangement. All controls for a total of 14 drive units are on the tending side of the machine. Electric top roll drives are provided for the third press and the breaker machine ahead of the reel at the dry stack.

An interesting addition to this machine ahead of the reel at the dry end is a 12 ft. James Brinkley Co. air dryer of new design by Meder Johnson, which blows air into the machine hood and pulls the air by vacuum through the hood. This gives more and dryer air for drying the sheet.

Svensk Flakt Fabriken, through its Canadian representative, SF Products Canada Ltd., built all aluminum hoods for this machine, in four sections. They are over the pre-dryers, the two sections of regular dryers and the Brinkley air dryer. They have removable panels. An opening at the breaker section permits easier changing of rolls. A large plenum chamber is a feature. Air taken from the hood is redischarged into the basement for the air to circulate through the dryers and also heats the room. All the air is oil filtered. A Grewin warm air system is in the dryers.

An automatically controlled Midwest Fulton standard drainage system was provided for the machine by James Brinkley Co., who also supplied agitators for couch pit and machine, and the Nash Engineering suction pumps, driven by two Westinghouse motors 500 hp 180 rpm synchronous motors with splash proof covers. Bird Vickery felt conditioners are used.

BIGGEST ROLLS EVER COVERED

—The roll covering work was divided between Stowe-Woodward, Inc., and its Pacific Coast affiliate, Huntington Rubber Mills, Inc. Stowe-Woodward did 37 rolls, including 32 table rolls. Reportedly the three heaviest press rolls ever rubber covered were the second and third press bottom rolls, and spare press roll, all 44 by 208 in., weighing over 65,000 lbs. These and the suction press roll and spreader roll were done by Stowe-Woodward.

Huntington, as previously mentioned, covered the 30 by 212 in. lumpbreaker. It rubber-covered 28 rolls, including two top press rolls and felt, wire and cone rolls.

A Westinghouse 600 hp single motor in the basement drives the line shaft for the machine. It is constantly regulated by means of magnetic amplifier control. All belting is by Graton & Knight. Fawick air clutches are on all the drives with Rice Barton hypoid gear units. Cone pulley is used for draw tension. Rice Barton babbit-lined bearings are on all dryers. SKF

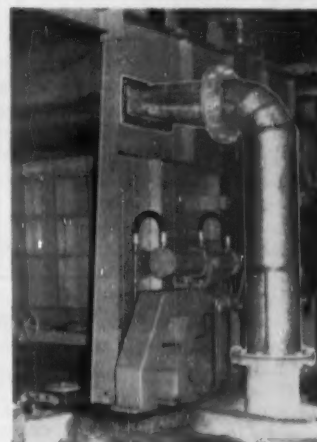
anti-friction bearings are on the line shaft, press and table rolls. The patented table roll bearing mountings have molded rubber inserts to reduce vibration. The drives have electrically operated belt shifters and on the reel and draw rolls are air-controlled rapid change belt shifters. Westinghouse motors drive the belt shifters in each of the 14 drive units. The main M-G set for the machine drive is driven by a Westinghouse 750 hp synchronous motor and contains a 600 kw d-c generator. There are two 20 hp helper drives on the top roll of the third press and breaker stack.

Isaacson Iron Works, Seattle, provided a large lathe, altered to make it a machine roll grinder.



Congratulations to KETCHIKAN PULP CO.

... from a pioneer fabricator of stainless steel pulp mill equipment



We are proud of the
quality of our work
installed at Ward Cove.

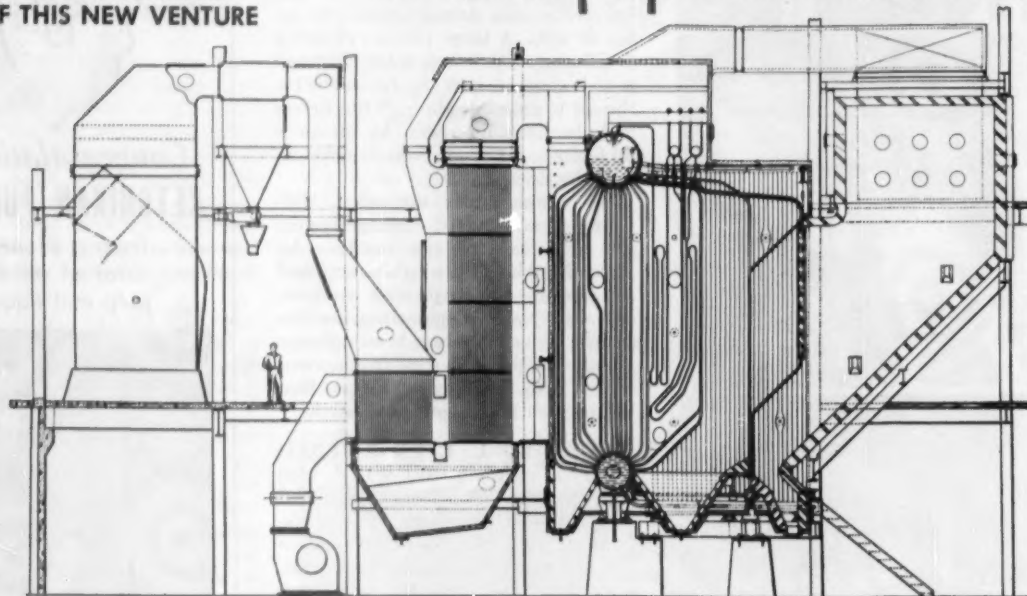
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Works**

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**BEST WISHES TO
KETCHIKAN
FOR THE SUCCESS
OF THIS NEW VENTURE**

to serve pulp mill in ALASKA



Ketchikan Pulp Company—the first pulp mill in Alaska—will produce dissolving pulp employing the Magnesium Bisulphite (MgO) process. This will be the first new plant to use this process.

B&W is the exclusive licensing agent for the MgO process. Each of the two B&W heat and chemical recovery units for this plant is designed to generate 93,000 lb of steam per hour . . . will consist of a two-drum bent-tube boiler with superheater designed to operate at 860 psi and 825 F total temperature, and equipped with Y-jet liquor

atomizers set in a refractory furnace.

In addition to the recovery units, two B&W two-drum Stirling boilers are on order, to be fired with oil and bark. Each power boiler will generate 160,000 lb of steam per hour at 860 psi and 825 F total steam temperature.

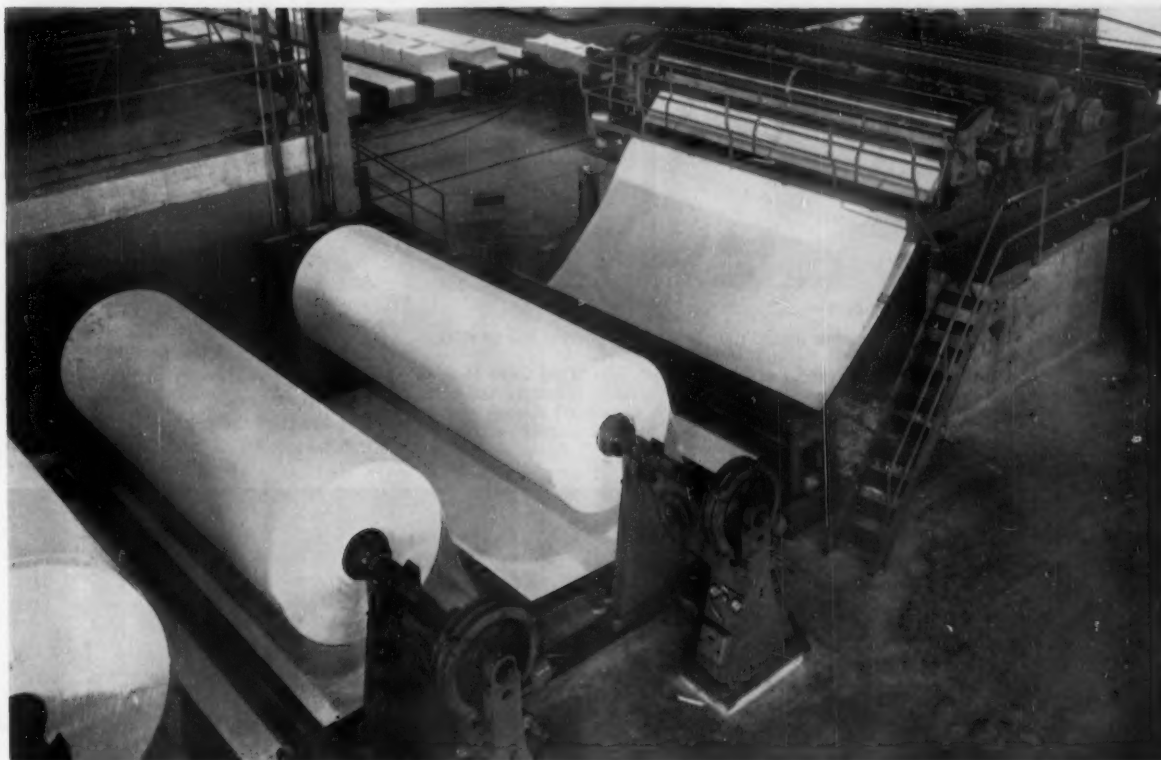
B&W invites your inquiries relating to heat and chemical recovery problems for both the sulphite and sulphate pulping processes. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

**BABCOCK
& WILCOX**



BOILER
DIVISION

F-779



BEGINNING OF AN INGENIOUS PROCESS

Three of 4 Lamb-Grays Harbor backstands are feeding 202 in. pulp rolls to Lamb cutter (50 tons hr. capacity) and beyond

—right—layboy delivers sheets to main table and they pass on to conveyors seen at top left—automatic fingers, contact switches, etc., doing amazing automatic handling job.

FINISHING AND SHIPPING

Light beams and contact switches control performance in a most ingenious automatic layout

● An extensive layout was required for finishing and shipping. Pulp is packaged as either bales or as rolls.

An Ederer 40-ton crane removes the big 202-in. wide jumbo rolls, weighing up to 14 tons, from the pulp machine winder. It is also used for moving big machinery. Weighing device for rolls is a tiny 5 by 14 in. cylinder on each arm of the crane, a Baldwin electronic crane scale. It records weights on a Minneapolis Honeywell recorder located on the wall a short distance away.

The crane sets the roll onto a battery-driven jumbo roll car furnished by Lamb-Grays Harbor which runs on narrow gauge tracks and carries it to the roll pit. This area has steel stanchions with block arrangements to hold the big rolls suspended three high. The entire pit will store 107 rolls. An Ederer 20-ton crane lifts rolls off the roll car and sets them in place in the pit.

The journals of the rolls are passed down between steel channels, and Lamb-Grays Harbor designed an in-

genious cycling toggle which will automatically stop the first roll at the bottom level, but off the floor. The second roll brings a long arm or chuck of its toggle around to a lock position. The top toggle will pass two rolls, but hold the third as its chuck or block comes in place. The operation works in reverse in removing rolls, the toggles being cycled so as to automatically receive or remove rolls without requiring adjustment.

If the jumbo rolls are to be rewound, a Cameron rewinder is used with automatic friction control equipped with shear cut slitters, driven by 125 hp magnetic amplifier controlled Westinghouse motor through Western Gear 1050 rpm reducer. The rewinder is followed by a complete roll finishing line made by Lamb-Grays Harbor for wrapping, capping and conveying and lowering the rolls to the ground floor and upending for removal by lift truck to the roll storage.

HOW BALES ARE MADE—For the

baling process, there are four big Lamb-Grays Harbor backstands serving a Lamb cutter and layboy, with capacity for 50 tons an hour in handling 202 in. rolls. Backstands have air controlled friction and remote trim register by Link-Belt motogears. Huntington Rubber Mills covered all cutter rolls. The cutter is driven by a 125 hp Westinghouse motor, magnetic amplifier controlled. Two rolls selected to meet viscosity and moisture content specifications are cut at a time.

An ingenious system devised by Lamb-Grays Harbor completes the finishing process for bales. The layboy receives cut sheets on feed tapes which deliver them onto the main table. The drive from the cutter engages screws of the main table, lowering it to keep the top of the stack of sheets at the proper receiving position.

When the stack has a predetermined number of sheets, the table lowers rapidly and the fingers are ejected to receive the pulp while the table travels to the discharge position. The accumulated stacks are automatically discharged from the main table of the layboy to the receiving conveyor. When the table is empty the elevating section of the table is again raised by means of the screws until it engages the position of the finger table and



HOW BIG ROLLS ARE HANDLED

(Left) Battery-driven Lamb-Grays Harbor jumbo roll car on tracks moves roll to storage. Don't be fooled—that man isn't pushing the roll! It ain't necessary.
(Center) Ederer 20 ton crane lifts rolls off car and lowers them into Ward Cove Builders "roll pit" where they are suspended three high by steel stanchions (capacity 107 rolls).
(Right) Unusual cycling toggle automatically permits 3-high suspended storage of rolls, and removal. Note chuck or block has "locked" in place to hold journal of this roll, after passing two rolls to lower locations.

receives the pulp which has been accumulated on the fingers, and the next cycle begins. All the way through this Lamb system, the pulp is automatically withheld from proceeding to a subsequent operation if there is any stoppage or blocking of the route ahead.

A series of storage conveyors are furnished between the layboy and the following baling operations so that pulp will be available to the baler while the cutter is stopped to change sheet size, a common occurrence in a dissolving pulp mill.

Stacks on the receiving conveyor are automatically transferred to a distributing car which travels out to the pre-selected storage conveyor belt to discharge its load. One of the scale operators selects a full storage conveyor from which to draw pulp for baling. A transfer car then travels to the selected conveyor and receives one layboy load. When a baling conveyor is empty and the scale operator is ready to receive a load, he presses the pushbutton which causes the transfer car to travel to his baling line, discharge its load, and return to the pre-selected storage conveyor to reload.

The scale operator controls his baling conveyor by means of a foot switch, bringing the individual stacks to him as he requires them. After correcting the weight of his bale, he transfers it onto the roll-over feed plate.

Here the bottom wrapper is placed on the top of stack, the roll-over feed pushes the bale into the roll-over machine, the bale is clamped and rotated 180° and then unclamped, and the rolled-over bale is fed onto the press feed unit.

The Lamb "Airfloat" press feed units are automatically synchronized with the operation of the Washington Iron Works 1,000 ton baling presses so that the pressed bale is fed out of the press and an unpressed bale is fed



WHAT HAPPENS AFTER BALES ARE WRAPPED

(Left) Bale is moving to stacker, where Chief Engineer Maurice Candey of Lamb-Grays Harbor watches start of stack-building.
(Center) After photo-electric units actuate various movements, stack of 6 bales is lowered to basement. (An odd one moved ahead . . . this was non-routine.)
(Right) And finally, here are 6 bales automatically deposited on Clark lift truck's fork.

into the press as soon as the press cycle is completed.

At the bale tying station, controls are by means of a foot switch. Grip-lock tying machines are used. After a bale is cross tied, it is turned 180° and the end wires are applied. The tyers then push the bale manually onto the stacker feed conveyor system. The bale continues down a gravity section to a position over the stacker feed conveyor. A jump section then lowers, depositing the bale onto the stacker feed chains, which convey it to the stacker.

The bale discharges from stacker feed chains onto the pan of the Lamb stacker, actuates a cylinder which pulls the pan from under the bale carrying the bale into contact with the back-guide and drops it in proper position on the elevator.

As soon as the required number of bales have been accumulated in the stack, the elevator lowers to its bottom position and discharges the stack of bales onto stacker discharge conveyor which automatically moves stacks onto the fork pick-up section as quickly as they are removed by a Clark fork lift

truck arranged to handle one or two stacks at a time.

Bales of pulp are identified by number. The picture of Ketchikan's historic No. 1 bale is exclusively shown with this article, photographed within a few minutes after it was produced, by PULP & PAPER.

Bales or rolls being shipped by boat go into pulp storage on the dock before being loaded on the ship. Those going by rail cars on the car ferry routes, either to Prince Rupert, or via Puget Sound, are loaded into the cars which run directly into the storage building. Car barges bring chemicals, take pulp on outgoing trips. It is notable that these loaded railroad cars can be moved on and off the barges or

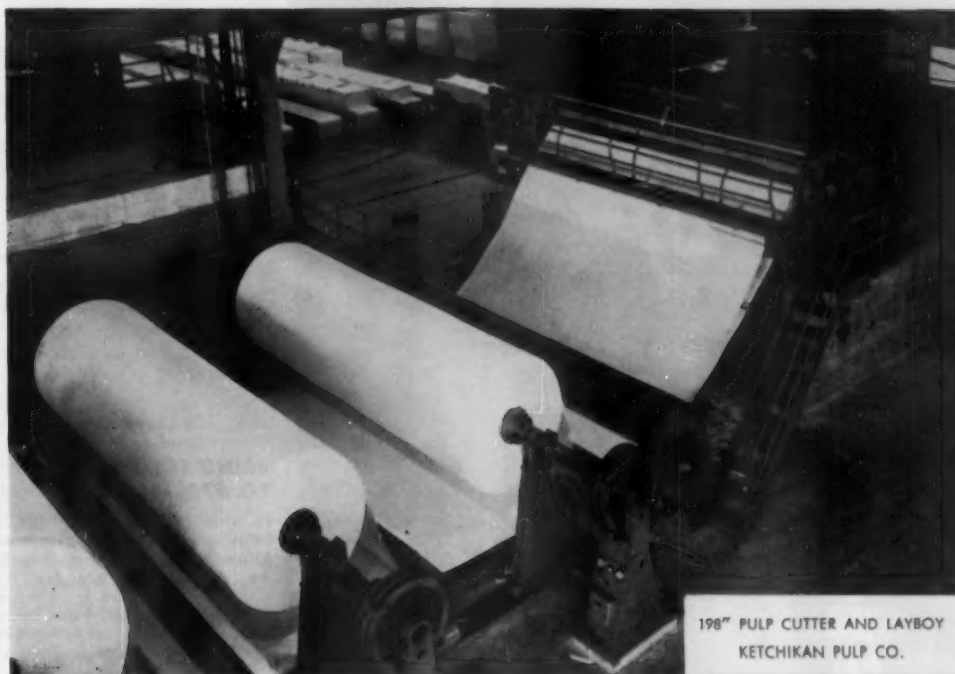
ferries while a tide of 12 ft. or so is running—the ferry slip having that much latitude for rising and lowering with the tide.

Alaska's First Pulp Mill Was Near Juneau

The huge concrete, steel and brick Ward Cove mill actually is the *second* pulp mill in Alaska's history. To say it bears no resemblance to the first is quite an understatement.

A 15-tons-per day groundwood mill (Alaska Pulp & Paper Co.) was built 33 years ago on Speel River, 30 mi. south of Juneau, by W. P. Lass and E. P. Kennedy, Treadwell Gold Mining Co. engineers. It consisted of one grinder, operated by water wheel, and these relics still remain on the site. The wood housing is gone. Timber was bought from the Forest Service.

From 1921 to 1923 it sold groundwood to Puget Sound mills, then was forced to shut down because of low prices for its crude product. Speel River is again being considered today as a good power source for a mill.



PULP FINISHING SYSTEMS

NO longer can the pulp finishing operation be considered the orphan child of the manufacturing process. Customer's exacting chemical, moisture, and sheet size requirements make a well organized finishing room a prime requisite for the successful dissolving pulp producers. Low labor cost and a quality bale are essential to both dissolving and paper grade producers.

Lamb pulp finishing systems have been developed to process and handle the pulp sheet in the most efficient

manner from the time the sheet comes from the dryer until it is shipped. Although the basic process and methods of handling are essentially the same among the various pulp manufacturers, the design of the machinery is controlled by many varying factors that differ considerably from one installation to another. Every item of Lamb Pulp Finishing Equipment is specifically designed to perform its function under the particular set of circumstances governing the installation.

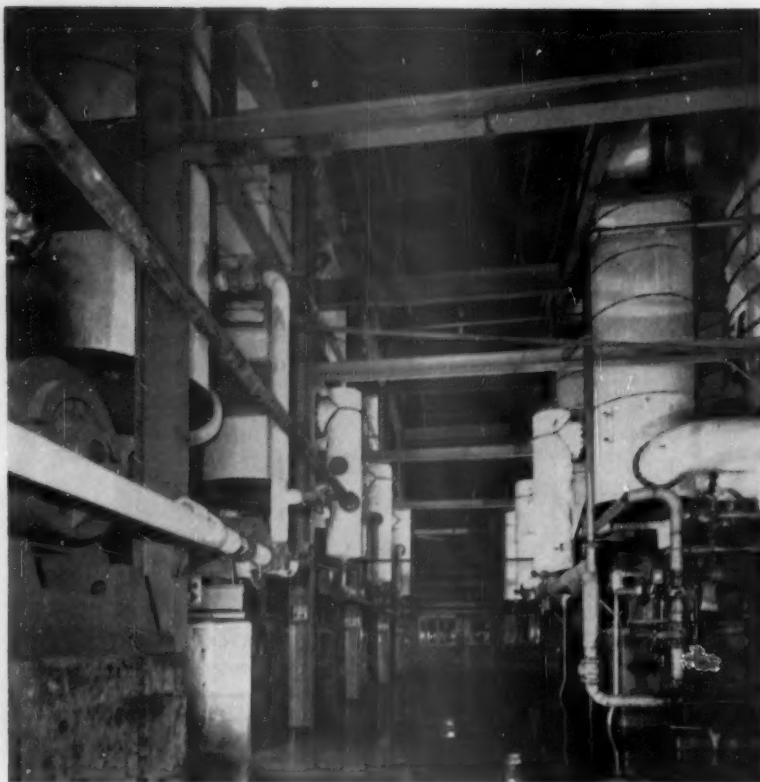
• Recent installations of Lamb Pulp Finishing systems have been made at:

Bowaters Southern Paper Corporation
 Buckeye Cellulose Corporation
 East Texas Pulp & Paper Company
 Ketchikan Pulp Company
 Rayonier Incorporated, Jesup Division

BY



LAMB-GRAYS HARBOR Co., Inc.
 Hoquiam, Washington



EVAPORATION

New features are introduced in this all-stainless system which uses new magnesium oxide process

• The "evaporator division" is a major area of the operation in any mill using a chemicals and heat recovery process, and it is of vital importance where the process is new, as at Ketchikan Pulp. It is vital to the extent that magnesia and sulfur are successfully recovered and this may range approximately from 75% to 90%.

One of the reasons Weyerhaeuser, and now Ketchikan, are using the MgO system is that the MgO base lends itself to recovery of chemicals for sulfite pulping. Also the scaling of evaporators in MgO base pulping is minor compared to calcium base. Other alternatives have not resulted in as successful recoveries as MgO.

The Ketchikan MgO evaporator plant differs from the Weyerhaeuser one in that the heaters are vertical, as they are in kraft. At Weyerhaeuser, they are horizontal. But unlike the evaporators in a kraft mill, where they are together, heaters and vapor bodies in the Ketchikan plant are separate.

Ketchikan has an all-stainless steel system, one of the major investments of the mill, which is 6-effect, 9-body evaporation system entirely built by

Hydraulic Supply & Mfg. Co. of Seattle. It was designed by James Rubush, of Wenatchee, Wash., widely known pulp industry engineer, who died only a few months before the startup.

These evaporators are designed with one 6-pass surface condenser and one pre-cooler. The system includes 2-



SIX PASS CONDENSER

Hydraulic Supply Mfg. Co. supplied this 6-pass surface condenser photographed by PULP & PAPER near ceiling of evap plant, 40 ft. up ladderways.

BRING SOLIDS UP TO 57% TO 60%

In this MgO process, 12% solids are brought to 57% to 60%. Hydraulic Supply Mfg. Co. built 6-effect, 9-body evaporator, designed by late Jas. Rubush. All stainless pumps are by Bingham. Unlike in kraft, heaters and vapor bodies are separate. Joint acid plant-evap plant control room is in background.

stage jet injectors with an inter-condenser. The evaporators are Lukens stainless steel clad, covered with insulation, and their height—the equipment is 40 ft. high—make an imposing sight.

All vapor valves are hydraulic air-controlled butterfly-type stainless steel valves. Pumps are by Bingham and these include two of 1500 gpm each, all stainless. The equipment is in one huge room on the third floor of the power-recovery building. Permanent steel ladders and walkways near the ceiling areas permit ready access.

Spent cooking liquor reaches the evaporators at about 12% solids and is brought up to 57% to 60% solids.

On the third to the first effects, any evaporator body can be taken out for wash purposes. The condensate is used for washing. The three first effects are in parallel, but one is always on wash. There are two second effects, with only one on wash at a time.

In other words, this is a very versatile system. Any of the first three effects can be taken out for washing purposes at any time, and can be replaced with another. There are always two bodies on wash all the time, which is another unique feature of this plant. Washing is essential in this system, to free the bodies of scale.

Evaporated liquor goes to one of two heavy red liquor storage tanks, 55 ft. high by 12 ft. diameter, of 40,000 gals. capacity each. Allegheny

Ludlum supplied stainless steel for the tanks, fabricated by Hydraulic Supply. From red liquor storage to the boilers are 3-way DeZurik plug valves of stainless steel. There is much stainless steel piping in the evaporator room, and to and from it. Northwest Copper provided special fabricated steel plug cocks for the heavy liquor.

Any residual SO_2 is recovered from spent liquor by being vented from evaporators to the acid plant.

Foxboro level controls automatically operate on every evaporator body. Each one has an inlet flow controller and an automatic density controller on discharge.

Controls for the evaporator plant share the same glass-enclosed control room as those for the adjoining acid plant. They are on two separated walls. The room itself is in a corridor, between the two plants. It is, therefore, just a step outside of the big evaporator room. The evaporator board is a comparatively small one with a Minneapolis-Honeywell Elektronik for temperature in the middle and Foxboro pressure and level gauges on each side. Panalarms are used to warn of any flow break. Skyline Electric & Mfg. Co. of Seattle made the panelboard.



"TWO SLAVES" was price of each totem pole in this Alaska motif entrance to Ketchikan Mill.

"2 Slaves" was Price For Ketchikan Totem Pole

An elderly Indian native, Casper Mather, carved the two totem poles which stand on each side of the administration building entrance at Ketchikan Pulp. It took some adroit negotiating by Harold Cavin, chief construction engineer, to make the deal.

The Indian first balked when oblong, instead of orthodox round poles, were prescribed, in order to match the architectural scheme. When he couldn't pick out his own choice of animal and bird heads to decorate the poles, he decided for sure that the mill builders were crazy.

He used his hand, instead of a ruler, to measure. And his price was "two slaves" for each pole. Translated, \$150 for each one.



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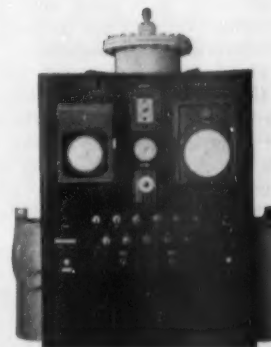


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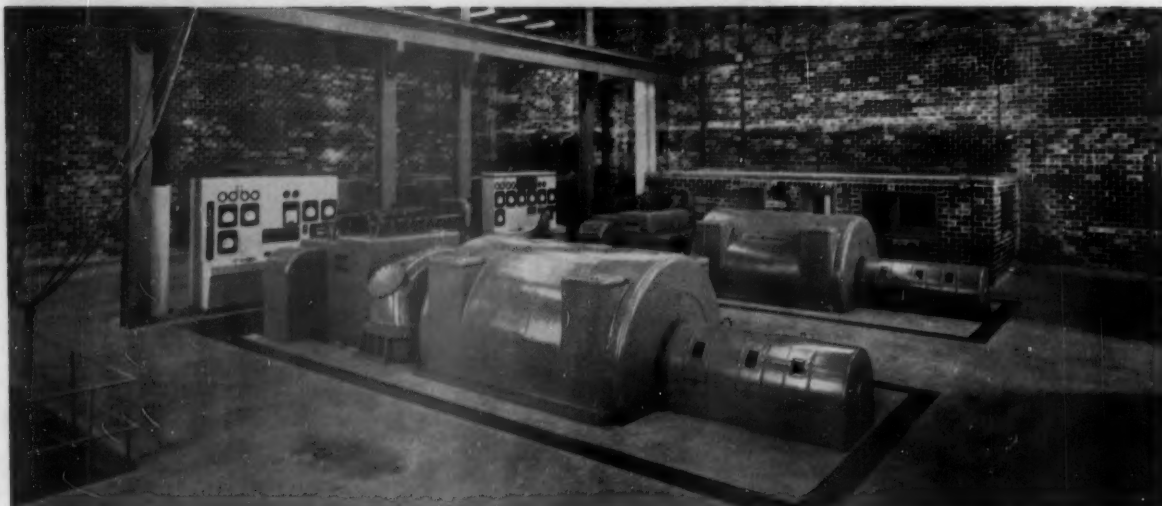
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TURBOGENERATORS FURNISH MILL WITH POWER
Maximum connected motor capacity of these two General Elec-

tric 10,000 kw. turbogenerators is 28,000 horsepower. Four B&W boilers serve them.

POWER AND RECOVERY

How recovery of heat and chemicals aids mill to cut its operating costs and to abate pollution

• The power and recovery processes at Ward Cove are operated as a single unit, in a brick and concrete structure. Burning for recovery is the next step after evaporation.

The heat and chemicals recovered at this mill are of greater value than the cost of recovery, and therefore a net profit is thus achieved. But besides this, a practical means is thereby found to avoid whatever pollution might occur in the remarkably deep, fast-moving tidal waters.

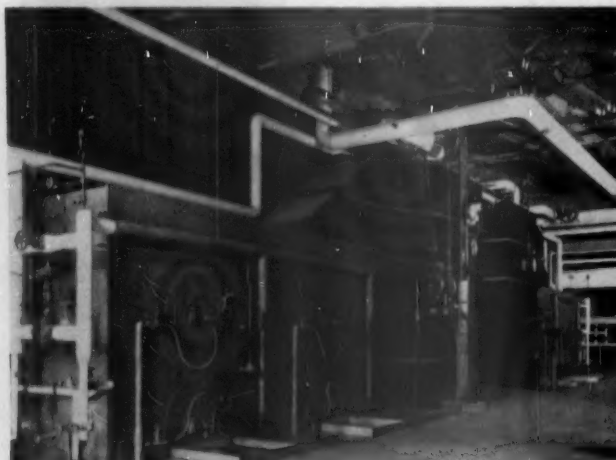
Main units are two Babcock & Wilcox red liquor recovery boilers and two Babcock & Wilcox power boilers. These were erected, with auxiliaries, by C. C. Moore & Co. General Electric constructed two turbogenerators of 10,000 kw each, which are served by the 4 boilers, and the turbogenerators furnish the entire mill with power. Their maximum connected motor capacity is 28,000 hp.

Evaporated used red liquor is sprayed into the recovery boilers for

burning. Sulfur dioxide is recovered as a vapor and magnesium oxide as an ash.

Heat recovered as steam in these recovery boilers provides about 60% of the steam needs of the mill. The rest is supplied by the power boilers, which burn oil or bark or both. With hydraulic barking and such a high percentage of tree utilization resulting, there is very little wastage, mostly bark, and this is never expected to produce more than 10% or 15% of mill steam requirements.

Power boilers are rated at 160,000 lbs. steam per hr. each when they are running continuously on oil. Equipped to burn wet bark up to 70% moisture, 120,000 lbs. per hr. each when burn-



WHERE POWER BOILERS ARE OPERATED

This is operating aisle for No. 1 and No. 2 Babcock & Wilcox power boilers. In left foreground are oil burners for No. 1. Those for No. 2 are in background. Rated at 160,000 pph. on oil, they also are equipped to burn bark.



FIRING BARK AND OIL

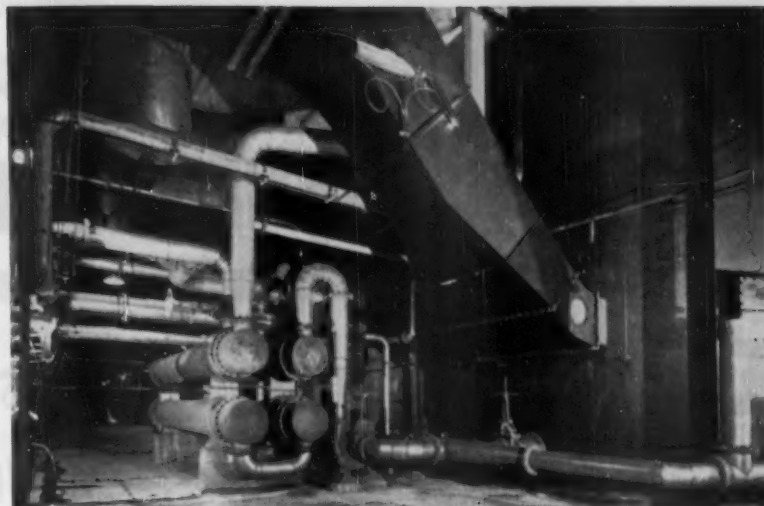
These are forced draft and induced draft fans on the No. 1 Babcock & Wilcox oil and bark burning power boiler, driven by Westinghouse motors. Base of Rust Engineering's stack is in left background.

ing part bark and part oil. They are automatically controlled throughout with Bailey Meter controls.

A 36 in. Goodrich belt on Link-Belt conveyor carries bark to the boiler house where a Link-Belt chain flight conveyor distributes it with gates and chutes into boilers. The B&W red liquor recovery boilers are each rated at 93,000 lbs. of steam per hr., but will do up to 115,000 pph. These boilers are started up with oil, then burn the red liquor of about 60% solids. Every operation with these boilers is automatically controlled, mostly with Bailey Meter instruments and recorders.

A Cochrane deaerating feed water heater furnishes water to two boiler water feed pumps supplied by Bingham Pump Co. A third pump is serving as a standby to either the boiler feed pump or Bingham hydraulic barker pump. These all have rotating elements designed alike. The third one is interchangeable with change of speed up to 4100 rpm on the turbine. Westinghouse provided an 800 hp 2300 volt Westinghouse motor. An 1150 sq. ft. feed water heater was supplied by Westinghouse. National Aluminate Co. provided boiler water engineering services.

Unusual new equipment in the power plant is a Cochrane demineralizer, one of the first two of their kind to be installed on the Pacific Coast. This is a two-bed unit, fully automatic demineralizer with silica removal. It is a de-ionizing process which removes practically all minerals or ions present in raw water. First step is a hydrogen zolite cation exchanger that converts all salts present



SO₂ VAPOR AND MgO ASH RECOVERED

Besides heat for energy, sulfur dioxide and magnesium oxide are recovered by the Babcock & Wilcox red liquor recovery boilers at Ketchikan. Flue from No. 1 Recovery unit is in foreground; cooling tower heat exchangers are left of center.

to their respective acids; the second is an anion exchanger that absorbs these mineral acids.

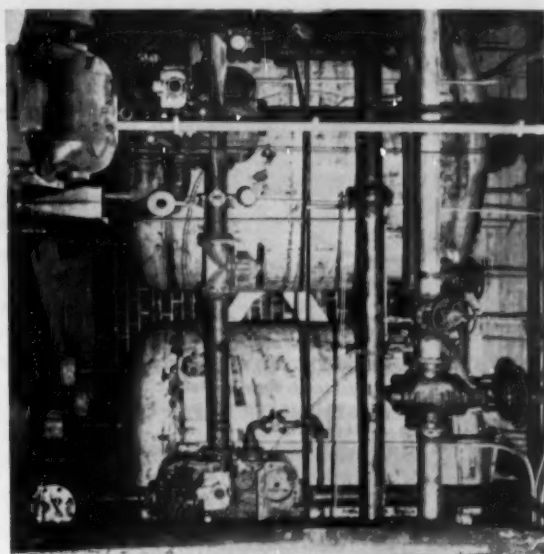
The power house has 15 kv metal clad switchgear, employing Westinghouse 150-dh-500 air circuit breakers which have a fault interrupting capability of 500,000 kva. The condenser is Westinghouse and is 3750 sq. ft. single pass. No circulating pumps are used since the natural head of water available at the mill is employed for circulating.

Following red liquor burning is the Multiclone dust-collecting unit supplied by Western Precipitation Corp. The concrete stack, over 150 ft. high,

was built by Rust Engineering.

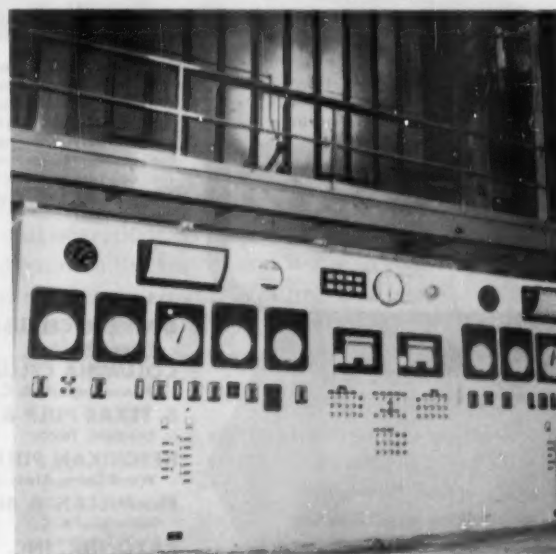
One of the GE 10,000 kw generators—No. 1—is an extraction and condensing unit. The other—No. 2—is an extraction and back pressure unit. No. 1 extracts at 50 lbs. and the remainder goes to the condenser. No. 2 extracts at 150 lbs. and exhausts at 50 lbs. Pressure to the throttle for each is 850 lbs. with 850 degree F. steam for both.

Switchgear in the turbine room is Westinghouse. Surge protection for generators and 13.8 high voltage switchgear is provided by a surge protective equipment cubicle mounted on the underside of the generators.



NEW AUTOMATIC DEMINERALIZER

Cochrane Corp. supplied two-bed unit, fully automatic demineralizer, with silica removal, for the power plant.



CONTROLS RECOVERY OPERATIONS

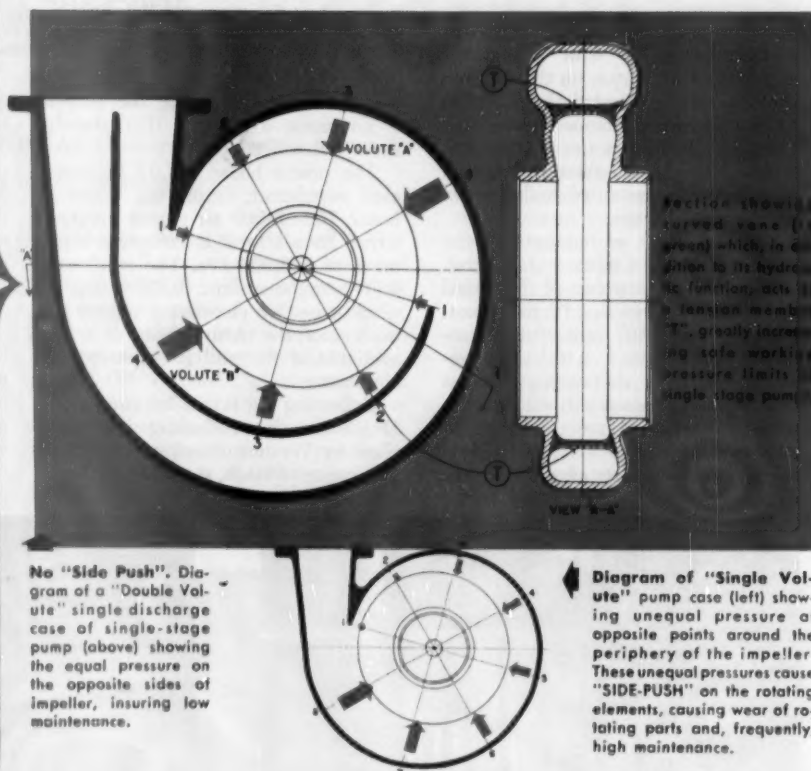
Control board for B & W recovery operations in Ketchikan Pulp Co. mill. Most equipment on board is Bailey.

7 BIG REASONS WHY

Bingham STANDARD EQUIPMENT

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- 6 **Unit type bearing** and rotating assembly is easily removable for inspection or repair without disturbing piping or driver.
- 7 **High operating efficiency.**

The Key to all these Benefits is the **Bingham "Double Volute" Design**



NEW MAJOR MILLS recently placed in operation, or currently under construction, equipped throughout with Bingham "Double Volute" Pumps.

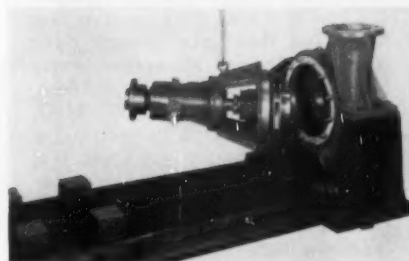
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In leading pulp and paper mills today Bingham "Double Volute" Pumps are selected as *standard equipment* because of their consistent record over the years for continuous operation with minimum maintenance.

The CF Bingham pump illustrated below, for example, has established an enviable record for dependability and low maintenance in hundreds of pulp and paper mills — but no more so than a dozen other types of Bingham Pumps now serving the pulp and paper industry.



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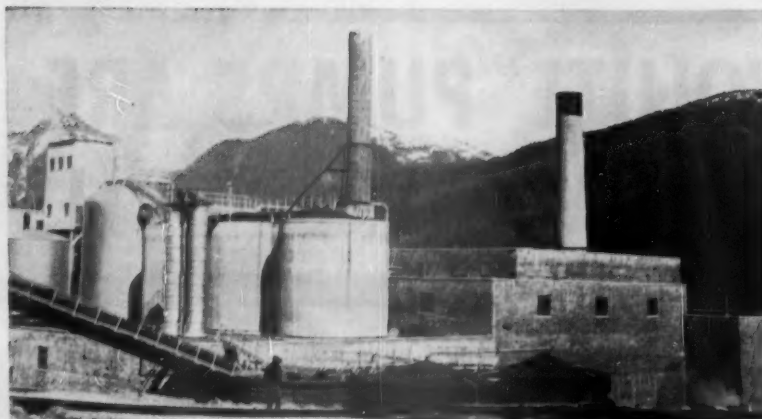
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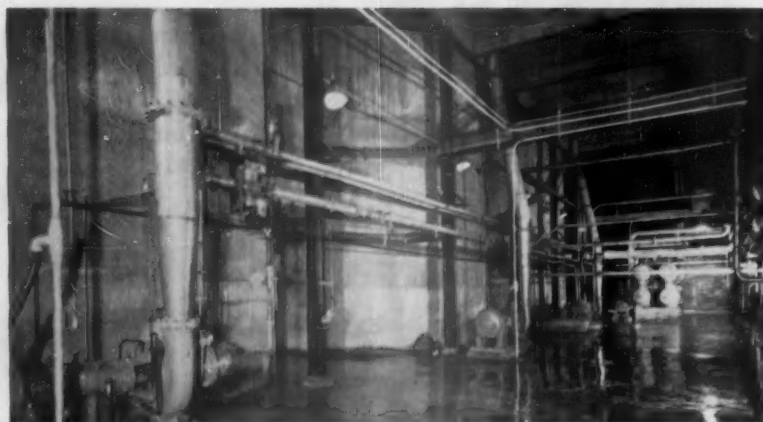
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STRANGE SIGHTS IN MgO RECOVERY SYSTEM

Power-recovery, evaporators and acid plant area looks unconventional, and it is. Rust stack at right is over B & W recovery boilers. Towers of all kinds come through acid plant roof at left. Three Stebbins lined fat concrete storage tanks are nearest, one with wood stave stack. Narrow steel, ringed towers are for H_2SO_4 . Steel towers beyond are cooling tower (higher) and MgO storage (lower) with Fuller Airveyor house above them. Chicago Bridge did steel towers.



LOWER PART OF SULFUR DIOXIDE ABSORPTION TOWERS

Same Stebbins lined towers seen above the roof in preceding picture. Here is where recovered MgO slurry is combined with recovered SO_2 . This goes through a Nichols Vortrap and Struthers-Wells heat exchanger which served as raw acid cooler (rear right). Bingham circulating pumps at base of each tower.

ACID PLANT

Chemicals in unusual MgO process require special preparation and fortification for re-use in mill

• After the burning of used cooking liquor and recovery of magnesium oxide ash and sulfur dioxide gas, comes the preparation and fortifying of these chemicals for re-use. This is done in what is called the acid plant—the conventional sulfite mill name for this stage in the process. But since this is an MgO cycle, it is in many ways different.

The acid plant is a comparatively low brick and concrete building but seven steel and concrete towers rise through its roof, most of them to a height of 60 ft., about twice the height of the building. It presents a picture of a chemical plant never seen by the old-time sulfite veterans. There are towers clustered around the outside of the building, too, and it looks more like what might be expected in an ultra-modern chemical industry. It is an extensive part of an MgO process mill, and represents a big investment, including all stainless steel pipes, fittings, valves and pumps for SO_2 .

Halvar Lundberg, veteran chemical engineer and consultant in the development of the Pacific Northwest Sulfite industry, was closely identified with this Alaska project, working with Ketchikan and Puget Pulp engineers.

First, consider the MgO cycle. The ash is received via a Multiclone system and is washed on an Impco washer and slaked in two 8 by 10 ft. slaking tanks and then goes to an 8 by 8 ft. storage tank. Straight mild steel is used in handling MgO. It is not corrosive, but it is very erosive.

At this point a makeup supply of MgO is added. This chemical is supplied by Westvaco and arrives in box-cars, delivered from Puget Sound by barges.

A Fuller Airveyor system which towers above the acid plant, and is located just outside the building, pneumatically removes the MgO from box car to steel storage tank and then to a day tank. The MgO is added right at the discharge of the washer

processing the recovered ash.

Leave the MgO there, momentarily, and turn to the SO_2 gas. This comes through Multiclones from the furnaces and goes to a steel, brick-lined cooling tower and then goes through three concrete, tile-lined absorption towers in series. Tile work was by Stebbins. Meanwhile, makeup sulfur, like MgO, arrives in r.r. cars on barges. Sulfur comes from Wyoming and Texas. It is loaded by Link-Belt automatic power scoop into a hopper, and a screw feeder loads it on the first of two L.-B. conveyors with Goodrich rayon fabric belts and 45° idlers which take the sulfur to the top of three 70 ft. high, 22 ft. diameter concrete sulfur silos. They hold 600 tons of sulfur each. A motorized Link-Belt tripper distributes to the silos.

Screw feeders and screw conveyors, all part of a Link-Belt system, take the sulfur from beneath the silos to a special pivoted weighing screw conveyor, which in turn loads the melting pit. It automatically weighs out 400 lbs. at a time to be melted. This is an all-automatic dumping system, on a time cycle, which was developed by Puget Pulp engineers and the Alaska installation duplicates one in



TO ACID PLANT

Long pipe gallery is almost totally "lined" with stainless steel—all this piping being of that material, fabricated by Northwest Copper Works . . . Leads to acid plant.

use at the Puget Mill, Bellingham.

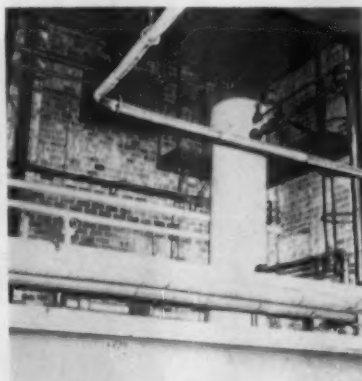
From melting pit the sulfur liquid is pumped via a stainless steel Bingham pump to the Sumner Iron Works 5 by 16 ft. rotating sulfur burner where it is oxidized to SO_2 at 500 to 600° C. The burner has an automatic control to give correct percentage of SO_2 with a sulfur level controller in the burner. A Westinghouse motor drives it through Western Gear reducer. The gas passes on to combustion chambers in series, as designed by Mr. Lundberg. Here temperature is about 1000° C. Gas then goes to a cooling pond which consists of a submerged pipe section and vertical risers, with water coming down as a film. All cooling pipes are made of lead. Temperature is lowered to about 25° C. in five seconds. (About 350 gal. of digester cooking acid is produced per minute).

From cooler the gas goes into a hard lead burner gas fan which has an illium G cast impeller driven at constant speed by a 40 hp Westinghouse motor, but it has an automatic draft control.

From here, SO_2 goes into a fortifying tower, 60 ft. high by 6 ft. diameter, and into a sulfurous acid tower, 60 by 5 ft. Both were constructed by Puget Sound Sheet Metal works and lined and packed with stoneware by Stebbins.

This makeup sulfur, therefore, is used as to fortify the acid and to produce a sulfurous acid solution. This latter use is unusual and new to this industry. For the control of acid strength, the Ketchikan mill is to use burner gas to make a sulfurous acid solution which is then stripped at 100 psig to give 100% SO_2 , which is in turn used to fortify acid in the accumulators. The stripper is a tower provided by Vulcan Copper & Supply Co.

WHERE MgO IS COMBINED WITH SO_2 —Now, returning to MgO , which was left at the slakers: The MgO , now in form of a slurry, is pumped to the three absorption towers. Here it is combined with the recovered SO_2 . There is a Leeds-Northrup pH control on the last of the three towers. Then the combined chemicals go through a 6 in. Nichols Vortrap cleaner and a Struthers-Wells heat exchanger, which serves as a raw acid cooler. Then the material goes to a settling acid tank of 100,000 gal. capacity of wood-stave construction by Brooks Lumber Co. and to four acid filters, each 11 by 18 ft. and 10 ft. high, lined by Stebbins with tile and supplied with special sand by Northwest Filter Co. Next is a clear well, also made of Brooks wood-stave, and then to the fortifying tower, then two



STRIPPER

Vulcan Copper & Supply Co. Stripper, where sulfurous acid is stripped at 100 psig. The 100% SO_2 is then used to fortify acid in accumulators.

more acid filters of same size and type as previously described. Then to two more wood-stave tanks, same as the settling tank, for raw acid storage, each one 100,000 gals. capacity.

From here the process moves to the accumulator room, dominated by its three spherical 32 ft. diameter Chicago Bridge steel accumulators, each with Stebbins acid-proof brick lining. Each has a capacity of 114,000 gals. Raw acid flows from storage to a low pressure accumulator through a tiled absorption tower by Willamette Iron & Steel, then to a high pressure accumulator, also through a stainless steel absorption tower. Then it goes through a Struthers-Wells red liquor heat exchanger to what is called the cooking acid accumulator. Here red liquor is added for dilution, before it goes to digesters.

A unique feature of this entire process is that the sulfite cook, not the acid maker, has complete control of the acid strength of the cooking liquor



ACCUMULATORS

Stebbins acid-proof lined Chicago Bridge steel accumulators, each with 114,000 gals. capacity. Raw acid flows to low pressure accumulator, then high pressure one, via absorption towers, then to cooking acid accumulator, where red liquor is added. Sulfite cook has complete control of dilutions.

as he controls the dilution, before it goes to the digesters.

In the acid plant there is a fabulous wealth of stainless steel. The pipe gallery from acid plant to accumulator house is covered on ceiling and one wall with piping fabricated by Northwest Copper. Bingham supplied two big stainless acid pumps, as well as smaller ones. Stainless valves supplied by Esco, by Crane Co. and Fabri-Valve are frequently seen.

The acid plant controls, located in the same room with evaporator plant controls, include a fully equipped board for an automatic system that compares with the most advanced in any industry. Here is a Brown Elektronik instrument for burner gas temperatures, Foxboro instruments for measuring various levels and the temperatures in the Vulcan stripper, and Leeds & Northrup Speedomaxes for burner gas concentration. Panalarms are used on this board to indicate any disruptions.

MAGNITUDE OF ALASKA MILL

Continued from page 82

Erik T. Ekholm, in overall charge, was a frequent visitor at Ward Cove and was on the scene at the startup. Vic Haner, now resident manager at Ward Cove, took part in designing and planning. Dan Robbins, chief draughtsman on the project, is now plant engineer at Bellingham. A. R. (Babe) Carlson was field engineer at Ward Cove, Robert Shannon, chief office engineer.

A comparatively small engineering staff was possible—because it was continually aided by the process and chemical engineers of Puget Pulp.

Washington Pulp Baling Presses Selected for New Ketchikan Mill

Following the example of other recently constructed or newly equipped pulp mills representing the last word in efficiency, the new Ketchikan Pulp Co. plant relies on two 1,000-ton Washington rapid-traverse pulp baling presses.

The two units permit almost completely automatic finishing room operations. Stacks of finished pulp flow directly to the two Washington presses and are compressed at high speed to bales of pre-determined size, ready for wrapping and tying.

Exclusive characteristics of design, manufacturing precision and performance incorporated in the Washington pulp baling presses are essential to the speed and efficiency of the operation. Each press exerts maximum pressure of 1,000 tons. Automatic cycle control permits completing a cycle in as little as 15 seconds.

The presses used by the Ketchikan Pulp Co. are standard Washington pulp baling presses, having a maximum opening of 61¾ inches with stroke adjustable to 42 inches. Working platen area is 43 by 50 inches. They are engineered to deliver constant and trouble-free production with pin-point control and minimum operating and maintenance cost—the same reasons which have made Washington presses the consistent first choice for new and replacement installations in pulp mills throughout the North American Continent.



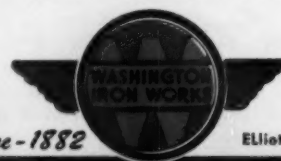
• • • Among other pulp mills newly built or expanded for increased production where Washington pulp baling presses have been chosen for high output and efficiency:

- SCOTT PAPER CO., EVERETT, WASH.
One 1,000-ton Washington press
- BOWATERS SOUTHERN PAPER CORP., CALHOUN, TENN.
One 600-ton Washington press
- WEYERHAEUSER TIMBER CO., EVERETT, WASH.
Two 1,000-ton Washington presses
- BUCKEYE CELLULOSE CORP., FOLEY, FLA.
One 1,600-ton Washington press
- RAYONIER, INC., HOQUIAM, WASH.
Two 1,000-ton Washington presses
- EAST TEXAS PULP & PAPER CO., EVADALE, TEXAS
One 815-ton Washington press
- RAYONIER, INC., JESUP, GEORGIA
Two 1,000-ton Washington presses

1500 6th Ave. South, Seattle 4, Wash.

Since 1882

ELIOTT 1292



WASHINGTON IRON WORKS

AT LAKE CONNELL

View of 85 ft. high dam, built to provide process water only for the mill. Also shown is Brooks Lumber Co. 3½ mile buttlocked woodstave pipe line to mill's filter plant.



WATER

New design for almost completely automatic filter and treatment plant is built in rectangular pattern

• The water filter and treatment plant, designed and engineered by Northwest Filter Co., of Seattle, attains a degree of practically completely automatic operation which is the most advanced ever achieved for similar processes. Its rated capacity is 46,000,000 gals. per day.

This contrasts with many filter plants in two noticeable respects, as to general layout. It was built with a rectangular pattern of tanks instead of circular, utilizing the full area, to save space, which was necessary as the site selected for it was on the rocky hillside above the mill proper. The plant is completely covered to protect it from freezing. The rectangular building covers an area 274 by 300 ft., about two acres.

Water from Lake Connell, where the new 85 ft. high concrete-steel dam forms a reservoir, backing up waters of Ward Creek and higher lakes, is piped 3½ miles to the filter plant through a 60 in. butt-locked woodstave pipe, treated with pentachlorophenol. The pipe is a specialty of Brooks Lumber Co. of Bellingham. Staves are split and made tight in four directions. Gate valves at the dam are by Chapman and the dam operations house is roofed by Puget Sound Sheet Metal Works.

In the filter plant, 16,000,000 gals. of water per day is filtered only. Another 30,000,000 gals. per day is treated with lime and alum to remove color. There are 23 filters in all in the plant, each one 14 by 40 by 12 ft. high. Each one is rated at 2,000,000 gals. capacity per day. From the plant there are two separate wood-stave pipelines carrying the treated water and untreated water down the hill to the mill.

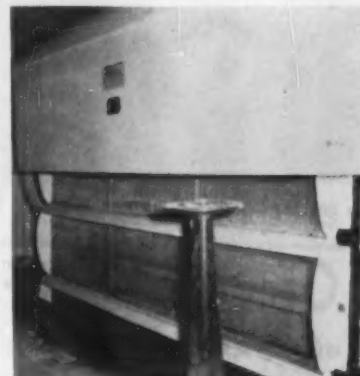
The most unusual feature of this

plant is that it requires only one man on a day shift, and the rest of the time it runs completely automatically. This one man makes jar flocculations tests and he sets the chemical feeds after the tests, and he fills the designated hoppers with dry alum and dry



VIEWS IN FILTER PLANT

Instrument gallery of Northwest Filter Co. almost completely automatic filter plant.

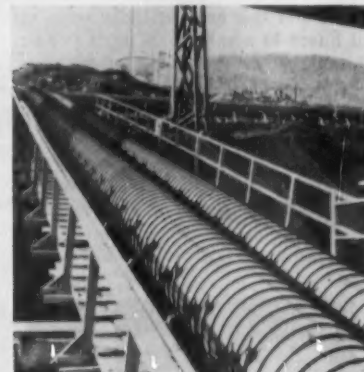


Chain Belt Co.'s Rex traveling screen is used for water.

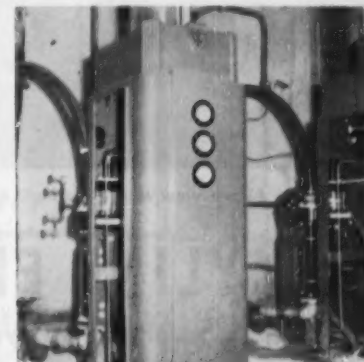
lime for the treatment section. And that is all that is ordinarily required of him.

The three settling basins are in a dark interior, but flood lighting is available when needed. A long gallery on one side of the plant is its instrument gallery. Most instruments are by Hagan Corp. and by Taylor Instrument Co.

In the treatment area, the settling basins are in the middle of the plant. Alum is used for coagulation and settling, with the lime maintained at



One line is carrying treated water to mill, the other untreated but filtered water. Unique Brooks Lumber Co. stave pipelines are buttlocked and treated with pentachlorophenol.



Wallace & Tiernan chlorinator is in the Northwest Filter operation.

proper pH for optimum floc. Filtering is through sand beds. Hydraulic mass mixing and coagulating is accomplished here without aid of any mechanical devices.

In a series of coagulating chambers, there are successive sets of coagulating elbows, each carefully graduated in order to progressively diminish velocity and prevent breaking up of floc. Water is retained in coagulating chambers 30 minutes, passing through venturi slots, which evenly distribute flow, to the settling basins. Settling periods are 2½ hours for maximum flow. Water leaving basins has a turbidity of 1 part per million or less. From here water passes over a skimming weir to the filter plant proper.

There are graduated sizes of sand in the filter beds. Water is collected from these through stainless steel laterals, so flow is even during back washing as well as filtering. Filtering capacity is controlled at a maximum of 2½ gpm of flow per sq. ft. of area and backwash is 17 gpm per sq. ft. A rate controller controls flow to maintain a set clear well level and to meet the plant water demand. Panalarms are used in this system to notify if clear well level falls below the set point, and this automatically steps up all filters to a rate of 3½ gpm per sq. ft. until the clear well level is restored.

JOINS BOARD

FRED E. ENDERS, Pres. of Bulkley, Dutton Pulp Co., sales agent for both Ketchikan Pulp and Puget Pulp, has been elected a Director of Puget.



On Rolls Bandwagon— Others Climb Aboard

AS PREDICTED in articles for several years in PULP & PAPER, the successful startup of the first Alaskan mill, has accelerated actions towards establishment of other mills.

Just three weeks after the first pulp was made at Ward Cove, Pacific Northern Timber Co., of Portland, Ore., was granted a preliminary award of 3 billion ft. for 50 years for an integrated operation at Wrangell, Alaska, supporting, sawmill, plywood plant, pressed board plant and 80 to 100-ton pulp mill.

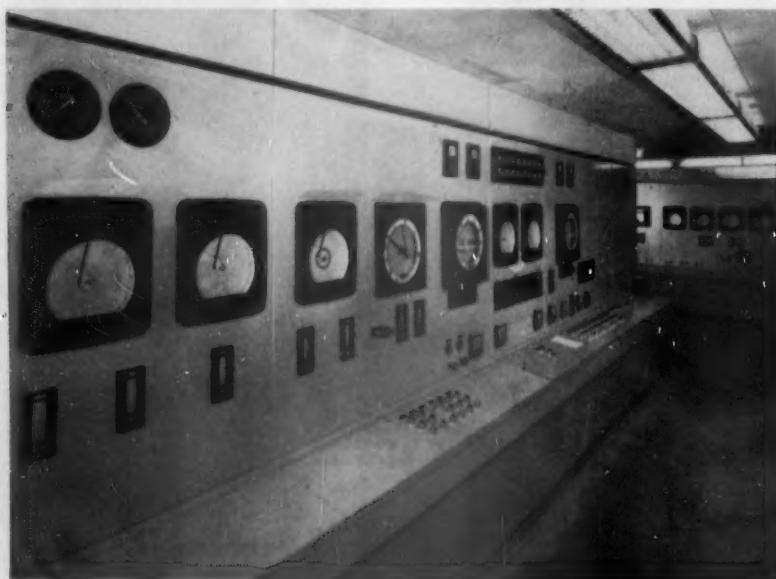
Japanese interests have formed an Alaska company and requested an auction sale of a Sitka area unit for pulp mill and sawmill, and this may be sold next year.

Georgia-Pacific Plywood Co., with western headquarters at Portland, Ore., also has requested a chance to buy a Juneau, Alaska, timber unit, planning an integrated \$57,000,000 forest products operation, including an 80-ton pulp mill.

Thus in a period of a few months, there have been more serious moves made toward building mills in Alaska than in virtually all the previous 35 years of campaigning for pulp mills by the USFS.

A new sawmill on Annette Island, 15 miles south of Ketchikan, also will draw 15 to 20 million bd. ft. a year from the national forest. The Ward Cove mill has increased Tongass National Forest wood production from 35 to 150 million bd. ft. a year.

New pulp mills in Alaska are certain to also bring new plants to supply chemicals. What kind of plants is not too certain, but good prospects are plants making liquid chlorine, sulfur from iron pyrites, soda ash, etc. Lime rock is plentiful and can be supplied in Alaska. The pulp mills may also stimulate development of known oil sources.



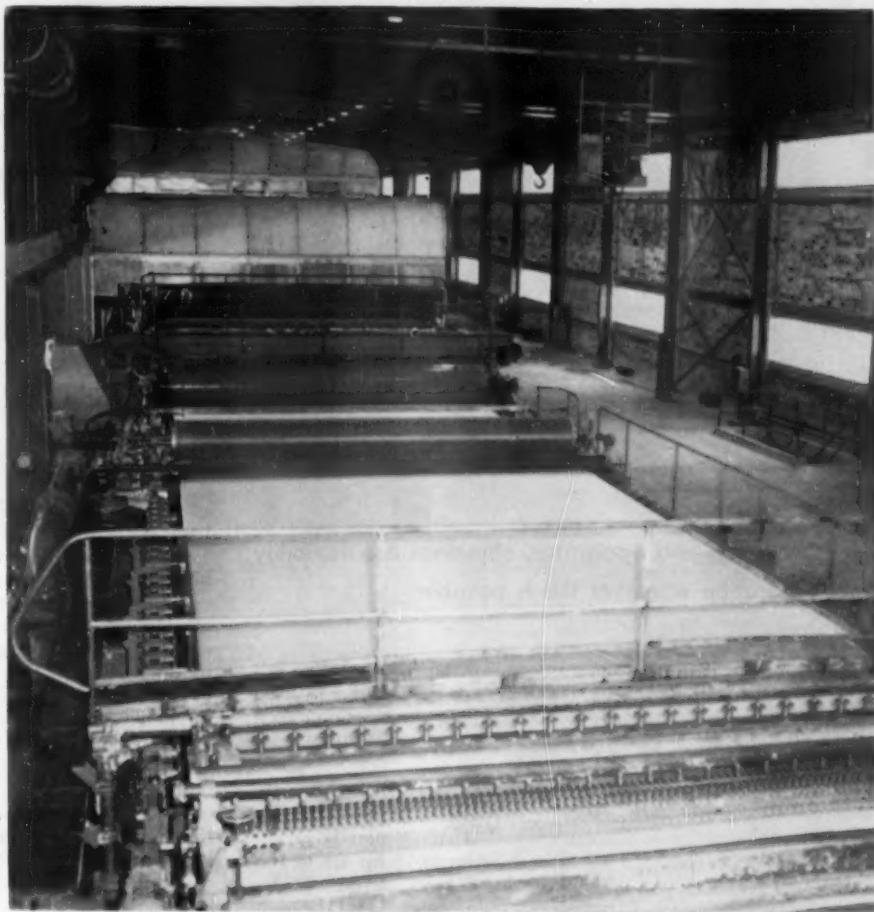
Above view shows the MgO system instrument control panels.

**Instrument
Panels at
KETCHIKAN
PULP
COMPANY
furnished
by Skyline**

SKYLINE ELECTRIC & MFG. CO. INC.

Manufacturers of all types of METAL CABINETS
RELAY RACKS — ELECTRIC PANEL EQUIPMENT

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Seattle, Washington



Neoprene Lumpbreaker Roll (212" Face x 30" Finished Diameter x 26" Core Diameter), supplied by Huntington Rubber Mills Inc.

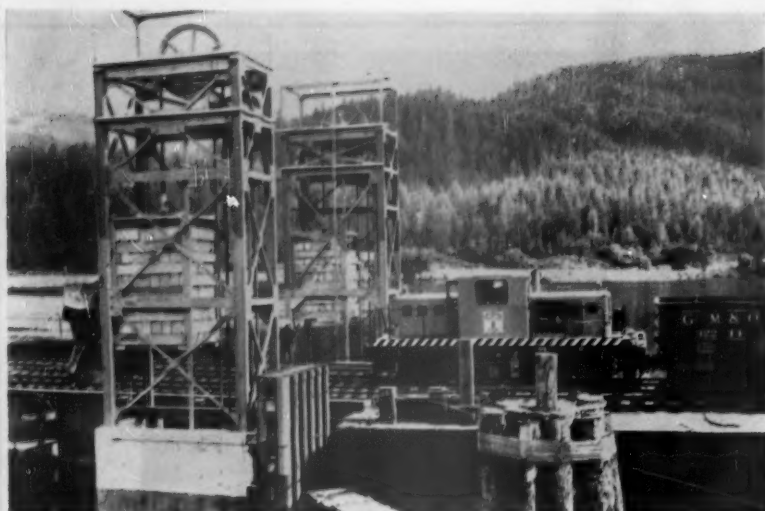
***We are proud to have played a major part in your Roll Covering work
and our Very Best Wishes to Ketchikan Pulp Company***

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ELECTRICAL SYSTEM

For distribution and apparatus, objectives are flexibility and duplication wherever this is possible

- The electrical distribution system at Ward Cove is a 13.8 kv radial type. Basically, there is one feeder for each department of the mill. The feeders are of the loop type in which they pick up several power centers or unit substations as the case may be. Westinghouse supplied all this equipment.

All transformers of the power type in the mill are coordinated with high voltage throat-connected entrance switches and throat-connected switchgear on the secondary side of either 2400 volts, or 4800 volts. If the secondary switchgear is 2400 volts, the transformers have a rating of 2500 kva and the entire assembly is termed a unit substation. If the secondary switchgear is 480 volts the transformers have a 1000 kva and the assembly is termed a power center. Since the transformer is throat-connected to the high voltage switch and likewise throat-connected to the secondary switchgear, it can be seen that the transformer may be easily removed at the time of fault within the unit without disturbing either the high voltage cable or the secondary switchgear.

There are nineteen 1000 kva power centers and three substations. The powerhouse substation is double-ended with a total capacity of 5000 kva. Seven of the 1000-kva power centers are double ended and five are single ended for a total of nineteen transformers.

The 2400 volt switchgear is 50,000-kva interrupting capacity air circuit breaker metal clad switchgear and is employed as motor starters of the 2400 volt motors. The 480 volt switch-

gear drawout metal enclosed type DB air circuit breaker gear and is used to feed low voltage group motor control centers or as motor starters.

FACTS ABOUT MOTORS—Generally speaking, all motors beyond 200 hp are 2300 volt. Again, generally speaking all motors up to 75 hp are of the totally enclosed type. Beyond 75 hp the application determines the enclosure with a great majority of the motors beyond 75 hp being splash proof. All motors, about 1000 motors all told, were by Westinghouse. There is a minimum of open motors in the mill. Important motors are described in sections of this article discussing mill divisions.

Western Gear Works' reducers are used with all motors ranging from 2 hp through 1250 hp. A total of 138 reducers in practically every ratio and model available were furnished. All units were, with minor exceptions, furnished as a complete drive unit with reducer, high speed coupling, low speed coupling or sprocket and customers motor mounted on a common baseplate at Western Gear's plant in Seattle. This was done to keep to a minimum necessary field time and to insure proper assembly of drive unit.

Control for 480 volt motors is Westinghouse Class 11-350 drawout type of control. Size 5 Linestarter, which at 480 volts will handle 100 hp motor, is the largest linestarter used. In the 100 hp to 200 hp category at 480 volts, the type DB-25 air circuit breaker is used as a motor starter. As previously mentioned, the 2300 volt

FIRST R.R. CARS AND LOCY ARRIVE IN S.E. ALASKA

For first time in its history, Southeast Alaska greets railroad cars being pulled off a r.r. barge from Puget Sound by a Baldwin-Lima-Hamilton 50 ton Westinghouse diesel electric locomotive, which stays on the job at Ward Cove, pushing pulp cars onto ferries and pulling off chemical cars. This slip automatically rises and lowers with unusually high and low Alaska tides.

motors are controlled by air circuit breakers of the 50-DH-50 type.

To handle fault current, the powerhouse motor control centers are equipped with reactors. Some of the other motor control centers which are close to the transformer feeding them use high interrupting capacity fuses to handle fault current.

The electrical system and the entire thinking on electrical apparatus was one of flexibility and duplication where possible. This is, of course, just good common sense, but was emphasized at Ketchikan due to the relatively remote location of the mill. It is 2½ days by sea to Seattle, although less than 3 hrs. by plane.

Interesting also is the fact that the entire mill has a minimum of power fuses. The only fuses other than control fuses in the entire mill are the high interrupting capacity fuses in some of the Class 11-350 low voltage group motor control centers. The fuses in this case were supplied to protect the control center at time of fault and were supplied in the control centers which were located physically close to the transformer feeding them. Where the control center was located a reasonable distance away from the transformer, the reactance of the cable brought the fault currents down to where the breakers in the motor control centers could handle it.

WASHING—SCREENING

Continued from page 101

of one wall and extend onto part of the other. There are probably more bleach controls than have ever been used before.

There is only a few feet separating these from the red liquor washing controls and recording equipment on the remainder of the other wall. Panalarms are spotted above both boards.

Evaporators at Ketchikan Pulp

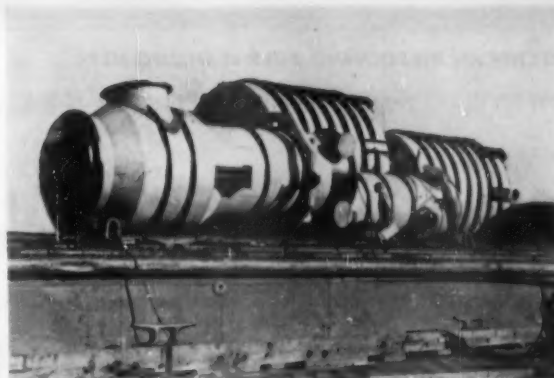
by

Hydraulic Supply

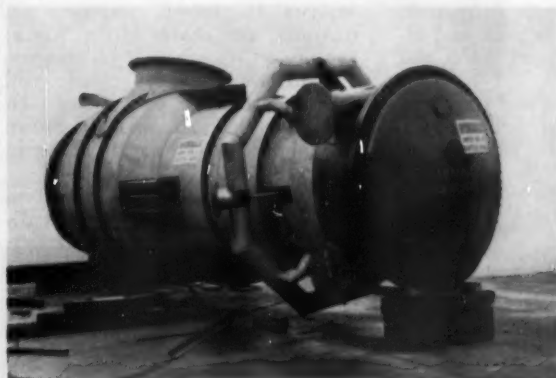


One of nine stainless steel heaters

All of these units are parts of the nine body, sextuple effect, stainless steel evaporator fabricated by Hydraulic Supply Mfg. Co., Seattle. These units were loaded on barges at our plant for shipment to Ketchikan Pulp Co., Ketchikan, Alaska.



Barge loaded with stainless steel evaporator units



Stainless steel surface condenser

Other Hydraulic fabricated evaporators have been installed at St. Helens Pulp & Paper Company, St. Helens, Oregon; Potlatch Forests, Inc., Lewiston, Idaho; Weyerhaeuser Timber Co., Everett, Wash., and three Hydraulic evaporators at Weyerhaeuser Timber Company's Kraft Pulp Mill, Springfield, Oregon.



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Since 1905



KETCHIKAN DISSOLVING PULP IS GOING HERE

Front Royal, Va., plant of American Viscose Corp.—one of first

of company's seven rayon plants to receive pulp shipments from Alaska. This pulp will be used mostly for rayon staple fiber.

Ketchikan Partner Leads the World in the

• A half-interest partnership in Alaska's first pulp industry is owned by the world's largest consumer of dissolving pulps.

Thus, Ketchikan Pulp Co. gets off to a flying start, with an assured outlet for 100,000 tons of its production every year for 20 years. Besides contracting for this pulp output, American Viscose Corp. shares equally with its partner, Puget Sound Pulp & Timber Co. in the \$7,000,000 of common stock and altogether Avisco has invested about \$12,000,000 in subordinated loans and capital shares.

Since it is the largest and oldest rayon company in America, as well as a large producer of acetate yarns and cellophane, American Viscose is, therefore, the best customer a dissolving pulp mill could have (Ketchikan also makes paper pulps).

AVISCO HAS 7 PLANTS—Founded in 1910, American Viscose now has 7 plants in Pennsylvania, Virginia, and West Virginia. Their producing capacity is 550 million lbs., a 47% increase since 1946.

This year and in the future, the larger part of Ketchikan shipments will go to two of these plants—the Nitro, W. Va., rayon staple plant, which has been expanded, and the Front Royal, Va., rayon tire yarn and rayon staple plant.

Initially, the plan is to use the Ketchikan pulp for rayon staple production.

While the merger of Sylvania with American Viscose in 1946 added a big cellophane plant to its business, there is no definite plan to use the Alaska pulp in the near future for this product. Ketchikan, however, is equip-

ped to produce the cellophane type of pulp.

The process of making acetate yarns with an improved woodpulp base has been one of the developments of recent years that broadened use of woodpulp. The "cream of the crop" of woodpulp can be used for this purpose. Therefore, if American Viscose chooses to use Ketchikan pulp for this purpose, it would go to its Meadville, Pa., operations.

About 2,000 freight cars a year would be required to carry the contracted amount of pulp to Avisco plants, normally via r.r. car ferry to Prince Rupert, then across Canada to the U.S. Mid-Atlantic states. That would be about 6 or 7 cars a day for a 300-day work-year.

It was in 1949 that the negotiations and studies that led to the Avisco-Pu-

get Pulp partnership were initiated. Dr. Frank H. Reichel, president and chairman of Avisco, was first in his company to launch the discussions. Later, William H. Brown, secretary and treasurer, took charge of the "Ketchikan project" in behalf of his company and has worked very closely with Puget executives ever since. Dr. Reichel is chairman, and Mr. Brown, vice president and treasurer, of Ketchikan Pulp.

With Avisco's interest in Ketchikan, there are now four producers of dis-



AVISCO LEADERS IN ALASKA VENTURE

DR. FRANK H. REICHEL (left), Board Chairman and President of Avisco, is also Board Chairman of Ketchikan Pulp.

WILLIAM H. BROWN (right) Avisco's Secy-Treas., is V. P. and Treas. of Ketchikan.



AND IT COMES OUT HERE—A NEW RAYON PRODUCT

These bolts of rayon fabrics are typical of the more than 10,000

rayon and acetate constructions developed by American Viscose research, which help to broaden markets for woodpulp.

Consumption of Dissolving Woodpulp

solving pulp products which have investments in the pulp industry. Celanese has its own woodpulp mill in British Columbia and DuPont a linters pulp mill in Virginia. Olin has indicated long-term plans to build its own pulp mill in the Southwest and it acquired forest resources there for that ultimate purpose.

HOW BIG IS AVISCO—The size of American Viscose Corp. is revealed in its 1953 sales of over \$228,000,000;



WHERE AVISCO PLANTS ARE LOCATED

Plants at Marcus Hook and Lewistown, Pa., Roanoke and Front Royal, Va., Nitro and Parkersburg, W. Va. make rayon staple or rayon yarn or both. Meadville, Pa. plant makes acetate and Vinyon; Fredericksburg, Va., is cellophane plant.

its net income of \$12,300,000; its listed assets of \$268,000,000. It employs 18,000 and it has 19,000 stockholders. Its business is transforming woodpulp into fibers for clothing, house furnishings and industrial uses.

Today, nearly 90% of total U.S. rayon-acetate production is from woodpulp, instead of cotton linters, which was formerly a more favored raw material. The steady trend to woodpulp, even for the highest quality, most exacting of these products, has been led by Avisco. Today it makes about one-third of all the rayon and acetate fibers produced in the United States, and does this mostly with woodpulp. The word "rayon" was coined from "ray" for shiny, and "on" for cotton—but perhaps "rayulp" would be a more accurate name today!

"FATHER OF U. S. RAYON"—In 1893, Samuel Agar Salvage, 17-year old native of London, came to America to seek his fortune. He sold wholesale glassware in Cincinnati for three years, then drifted back to New York, worked for a linen firm and, finally set up his own business importing yarns. From Germany, he imported the first rayon used in America. He became exclusive agent for Cortauld's when it began making "artificial silk" in England in 1906. On a postcard he

sent Cortauld's, he scribbled a suggestion that they build an American plant. The idea was accepted and the Viscose Corp. was created.

On a wintry day, Dec. 19, 1910, in a new brick building at Marcus Hook, Pa., then a little fishing village, the American rayon industry was born. A crew of 26 Englishmen and a group of American trainees, successfully started up 5 machines.

Sam Salvage was agent and sales manager. He did not become president of American Viscose until 1925. But he was truly "the father" of the rayon industry in America. He was president until 1937, chairman until 1939, and consultant and director until his death in 1946. He became Sir Samuel in 1942 when knighted by the King for services "to interests common both to Great Britain and the U. S."

In May 1941, ownership of Avisco went into American hands after Cortauld's made the stock available to the British Treasury to provide U. S. dollars for war materials. The stock was then offered to the American public.

ONE PLANT LEADS TO ANOTHER—The steady growth of American Viscose was evidenced by construction of the second viscose yarn plant at Roanoke, Va., in 1917; the third at Lewistown, Pa., in 1921; and

the fourth at Parkersburg, West Va., in 1927 (rayon textile yarns and rayon staple).

But American Viscose then showed its name did not bind it to the viscose process when in 1930 it built a quality acetate yarn plant at Meadville, Pa., and now also makes vinyon resin staple there.

In 1936, the viscose plant at Nitro, W. Va., was built, and it is the most recently expanded of the rayon plants and the first to use Ketchikan pulp. In 1940, the viscose tire yarn and staple plant at Front Royal, Va., was built and it is also an early recipient of

Alaska pulp.

The Fredericksburg, Va., cellophane plant, acquired in 1946, also has been greatly expanded. Dr. Reichel was prominently identified with this plant before its purchase by Avisco, as president of Sylvania Industrial Corp.

American Viscose, as in its Alaska venture, is also a partner in a new enterprise in the South. With Monsanto, it owns the new Chemstrand Corp., in which each will invest about \$30,000,000. Chemstrand's nylon plant at Pensacola, Fla., started up in Dec. 1953 but won't be completed till 1955. Its acrylic fiber plant at Decatur,

DR. FRANK H. REICHEL Jr., Coordinator in technical matters between Ketchikan Pulp Co. and American Viscose Corp.



Ala., offered its new product for sale in Jan. 1954.

NEW USES FOR RAYON—Several years ago, a fashion trend away from crepe fabrics shrunk what was a multi-million pound market for rayon textile yarns. There also was a decrease in use of lining fabrics. Dame Fashion thus hurt pulp mill suppliers, too, even forcing periodic shutdowns.

But this was a challenge to a company like Avisco, with its diversified research and development facilities, under Dr. Herschel H. Cudd. It is constantly searching for new end uses. There may be a lesson for the paper and pulp industries in what Avisco has achieved in finding new uses.

American Viscose, for example, has come up with a new latent crimp rayon yarn for upholstery and drapes. Its "Minifil" yarns have a built-in crispness meeting new fashion dictates. High tenacity rayon now goes into tapes and paper reinforcement, also foundation garments, and automobile seat covers.

Increasing use of improved rayon cord in auto and airplane tires is a bright spot. Over 85% of tire yarn now is made with woodpulp base-rayon.

Late in 1953 Avisco introduced Avisco Smooth, a new soil-resistant rayon carpet staple, which is meeting widespread acceptance in woven and tufted carpets. Many new fabric applications are also being explored, such as coffee and tea bags, special papers, feed bags, and tapes.

Its permanently washable "Avcoset" fabrics are well established in clothing of all types. Its fast-dyed "Colorspun" acetate and rayon fibers are also new.

Self-service markets are booming the use of its cellophane as moisture-retaining, see-through wrapping for all kinds of meats, baked goods and foods. Cellophane is teaming with plastics for vacuum packaging and flexible liquid packaging, and is used increasingly for dry goods.

As the industry, in which American Viscose is the leader, grows more diversified and—therefore—stronger, it makes those forest products industries which supply it with pulp stronger, too.



HOW KETCHIKAN PULP IS MADE INTO VISCOSE RAYON

Pictures illustrate steps in manufacture of viscose rayon from woodpulp. First, SHEETS OF PULP are placed in press and steeped in solution of caustic soda. Pulp is then shredded (called PFLEIDERING) and crumbs stored in aging cellar. After aging, crumb is placed in churns and treated with carbon disulphide. It is now known as XANTHATE CRUMB.

The orange-colored xanthate crumb is dissolved in weak solution of caustic soda (VISCOSE SOLUTION) and this solution is aged in storage tanks, filtered to remove foreign matter and pumped into SPINNING TANKS and then delivered to spinning machines. In SPINNING RAYON, the alkaline viscose solution is pumped through holes in the platinum and rhodium spinneret (close-up is seen in inset, showing minute holes ranging from .0020 to .0050 in. diameter) and coagulates upon extrusion into acid spinning bath.

In SPINNING IN MANUFACTURE, spinnerets are at bottom of acid tank. As yarn leaves acid bath it passes upward over revolving Codet wheels. YARN IS WOUND from cylindrical cakes of continuous filament onto cones.

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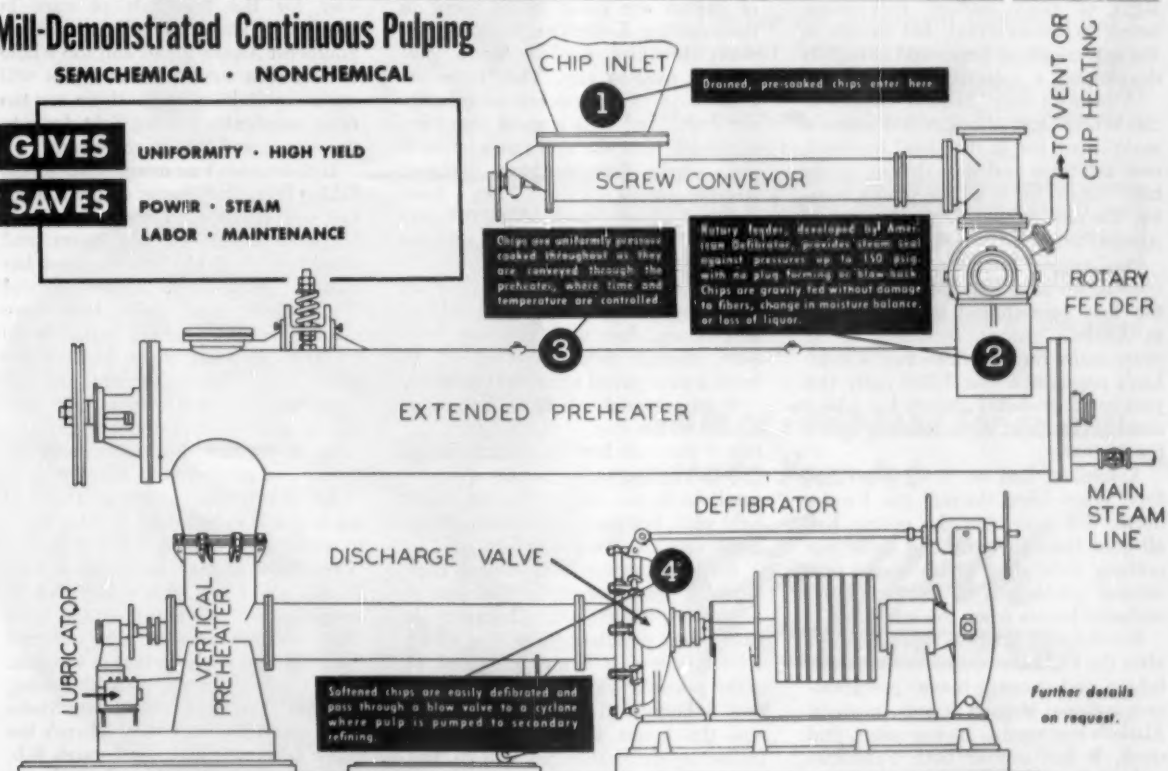
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STABILITY COMES TO A FRONTIER TOWN

View of northern area of city of Ketchikan showing small part of fishing fleet. The town's 7,000 population formerly depended precariously on fish and tourists.

The Town of Ketchikan is Growing Up

First year-round major industry in Alaskan history brings maturity and stability to Ketchikan

• Ketchikan, a town still showing the signs of early settlers' non-permanency in construction, has grown in the last couple of years and is rapidly developing a maturity and stability.

A neon-lit sign "Salmon Capital of the World" still is suspended across a main street, but in the Hotel Ingersoll, new ash-trays and shoe-shining cloths have turned up in all the rooms, bearing the new legend: "Pulp Capital of Alaska."

And around town the "new look" is coming on at a fast pace, thanks to the first year-around major industry in Alaska's history, including its 87 years under the American flag. Ketchikan's population was 7,000 early this year and it probably already has added another thousand. It is a trading center for 10,000.

Ketchikan had no Gold Rush history. Ward Cove, the mill site, 6 miles north, did have, but the miners had all gone from the cove and there was nothing there but a fish waste processing plant and a few scattered, secluded homes when the mill came.

Ketchikan sprang up a decade or so after the Gold Rush, and a commercial fishing and canning boom, precarious and seasonal though it was, made it Alaska's metropolis. In war years, and since, it lost out to both Fairbanks and Anchorage, pushed far ahead by army and government money, which brings no return, but was necessary for national defense.

MILLIONS BEING SPENT—Millions of dollars are going to be spent in modernizing Ketchikan, building the many facilities needed for a permanent modern city. The "boom-or-bust" days of dependence on fisheries are over. And it is a good thing for Ketchikan that the mill came when it did. Alaska fisheries have declined steadily since 1950. They have dropped from peak \$100,000,000 years to \$50,000,000 a year. Last year was the poorest ever.

The waterfront of Ketchikan is on piles, supporting old frame buildings and streets, but with the new mill here, enough money was found to build a new paved main thoroughfare.

Even a tunnel was blasted through a part of the steep hill on which the rest of the town literally seems to hang.

Two big apartment houses were recently built, one light green, the other, light pink, but they are modern. Many employees are living in them.

An ultra-modern 500-student high school is being completed this year at a cost of \$2,000,600. Chemistry is sure to be a popular course. The whole school system is being improved in every possible way. Most jobs in this new industry call for skilled workers, and the better their education the farther up the ladder they will go. Improved hospital facilities are now installed in Ketchikan, too.

A new paved highway leads to the mill and a few miles beyond. There

are still only about 27 miles of highway for the hundreds of cars in Ketchikan. The day is still far off when Southeast Alaska towns and the whole coastal area southward to states will see many linking roads—there are too many mountains coming right down to the water, and too much water.

If there aren't as many boats in the fishing fleets that cluster on the Ketchikan waterfront each year, there will be more traffic on big liners and freighters. And air line business has picked up sharply. Ketchikan and Ward Cove, incidentally, both have docking facilities where water is 40 to 60 ft. or more deep, just off the shore line. These shipping and air lines, and the storekeepers, the personal service establishments, restaurants, and other businesses will increase and prosper with the new mill.

An elderly watchman at the mill made this comment one evening there to a visiting PULP & PAPER editor: "I've lived around here for a long time. I never saw such a fine class of people as this mill is bringing in here. They are high class and a lot different than the kind we have had in the past. I used to go out commercial fishing, too. And I've gone out to the States many times for work, too. There's too many fishermen and not enough fish, now. I'll never go fishing for a living again. The job I have at this mill is going to be just fine for me. I figure I'll settle down here now."



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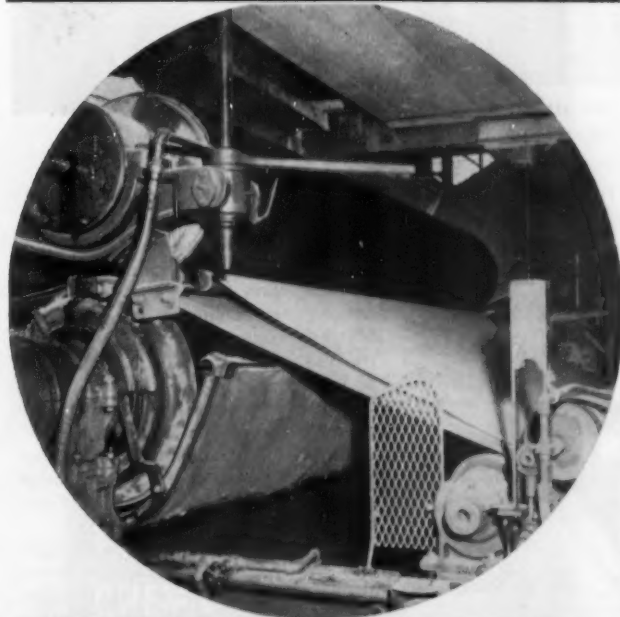
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Crown Zellerbach's No. 2 News Machine at Port Angeles, Washington, is equipped with a Beloit Pick-Up Transfer. In over 100 hours of continuous operation (since last start-up) no breaks occurred at this press. Machine speed is in excess of 1,700 feet per minute.

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Alaska's "Greatest Salesman" Never Gave Up

THE VERY FIRST ISSUE of this magazine, published in Feb. 1927, carried this article:

Newsprint from the North—A Comprehensive Survey of Southeastern Alaska as a Source of Supply
By B. Frank Heintzleman
Assistant District Forester, U.S.F.S.,
Juneau, Alaska

On this page is another article, by the same Mr. Heintzleman, now the governor of Alaska, written expressly for this issue. He had spent 36 years in the Forest Service in Alaska before Pres. Eisen-

hower rewarded him by naming him as Alaska's first really "home-grown" governor.

As a young Cheechako forester of the North, Frank Heintzleman decided to devote his life to bringing a pulp or paper industry to Alaska.

Now his dream has come true, but in a bigger way than even he had visualized. Instead of a newsprint mill, Alaska has a \$52,500,000 high alpha pulp mill, making a product of higher quality and value.

A great spontaneous cheer rose from the crowd of notables—150 leaders of industry, finance and government flown up from "Stateside" in two big planes, and many other prominent Alaskan guests—when Mr. Heintzleman was introduced at the mill's dedication.

It was the biggest cheer of the day, resounding on those still primitive surrounding hills, for virtually everyone in that throng knew that this was the one man who had done more than any other single individual to bring a pulp industry to Alaska. His whole career seemed a classic demonstration of the power of faith. Despite many bitter disappointments over the 27 years since he wrote that first article for PULP & PAPER, he never gave up the fight.

Almost year after year, he traveled across the United States, talking to publishers, to bankers, to pulp traders, to paper mill and rayon plant manufacturers—literally hundreds of leaders heard his persuasive story of Alaska's great destiny. He was Alaska's "Ace Salesman."

Wars, depressions, decisions to build new mills elsewhere—none of these things licked the man who had made his mind up about his goal when he was a young forester roughing it in Alaska's forests.

He not only had to try to sell industrial and financial leaders. He also had to contend with lethargy, red tape and sometimes lack of support and sabotage of his work in Washington, D. C. When his own Republican party came into power, he was rewarded for devotion for Alaska and his cause by being named governor.

Best Wishes

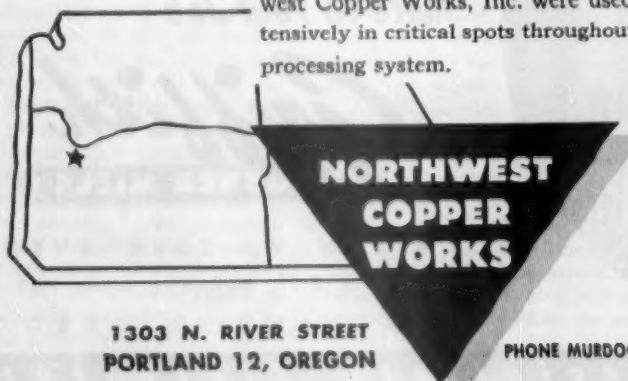
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Typical Illustration of Stainless Steel Fabrication Furnished

Stainless Steel Pipe, Fittings, and Special Fabrications furnished by Northwest Copper Works, Inc. were used extensively in critical spots throughout the processing system.



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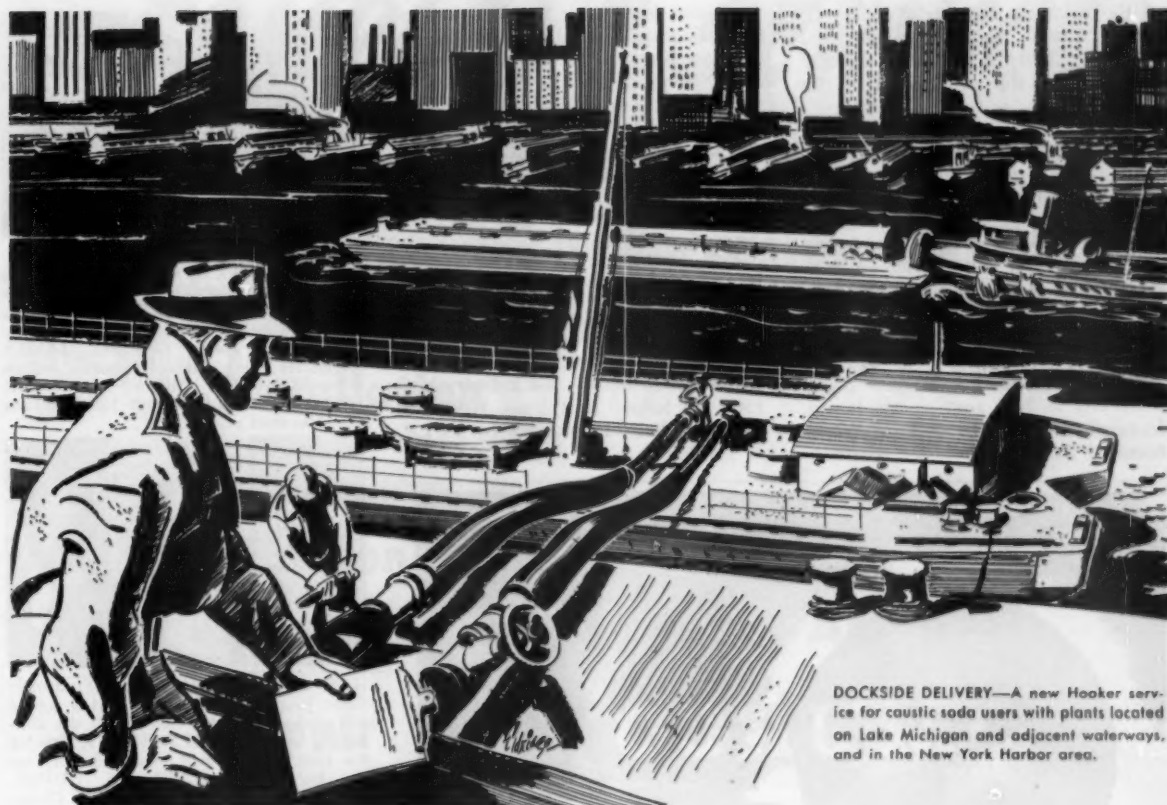
GEO. J. SCHUCHART, partner of Howard S. Wright Co., photographed by PULP & PAPER at new mill.



A New Company Created Especially to Build Mill

Unusual development in the building of the Alaska mill and Lake Connell dam was creation of an entirely new company for the \$52,500,000 project by two major contractors of the Pacific Coast. Howard S. Wright & Co., Seattle, with much valuable experience in the pulp industry in the Far West, and Guy F. Atkinson Co., San Francisco, whose specialty has been heavy equipment projects, combined to form Ward Cove Builders.

Partners heading up the Wright firm are George J. Schuchart of Everett, Wash., and Howard H. Wright, Seattle, son of the founder. Winston D. Brown is general manager. George H. Atkinson is president and manager.



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Company

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of the Atkinson firm and William E. Hoy is Seattle district manager. Mr. Schuchart and Mr. Hoy were directly concerned in top supervision of the new firm.

Project manager was Ralph Hawkins, from Atkinson. Earl J. Peters, of Wright, was general superintendent of mill construction. Al Chausse, of Atkinson, was general superintendent of dam construction.

Tom Myall, a Wright veteran, was project consultant. Office manager was Carl G. Lilja of Wright. Peak employment the first year was 400; the second year it jumped to a 1400 peak.

In 1955, Howard S. Wright & Co. celebrates its 70th anniversary. It was founded in Port Townsend, Wash. Some of the larger industry construc-

tion jobs done by it were the entire plant of Puget Sound Pulp & Timber Co., St. Regis Paper Co. in Tacoma, Rayonier projects at its three western mills, Everett Pulp & Paper modernization, still under way, and current jobs include Scott's paper mill at Everett and the new Longview Fibre box plant in Seattle.

They Saw History in the Making

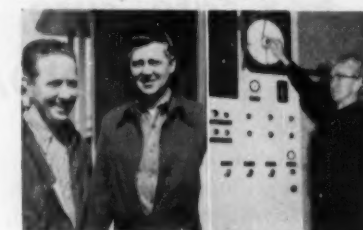
Equipment engineers and representatives were not only there, when the startup of Ketchikan Pulp Co. made Alaska history and industry history, but helped start it up. Here are some of them, in pictures by PULP & PAPER.



(L to r): DAVE HARRIS, Seattle Mgr., C. C. Moore & Co., who helped start up Babcock & Wilcox boilers in power-recovery; CHARLES ROGERS of B & W, who also helped get Hydraulic Supply evaporators going (designer JAMES RUBUSH died suddenly shortly before this); ROLAND J. BROWN, Jr., Seattle, who was on job for about 100 Bingham stainless steel pumps.



(L to r) MAX WHITTLESEY, Seattle Sales Engr. for Link-Belt, had a lot of ups and downs checking on all the conveying lines; DONALD BRADY, Erector for Rice Barton, had extended duty on the big dryer; ALBERT S. QUINN, Pres. of Stebbins Engineering Corp., Seattle, and Vice Pres. of Stebbins Engr. & Mfg. Co., Watertown, N. Y., which did one of biggest Semtile and Semplate jobs in its history at Ward Cove.



(L to r): WILLARD OSBORNE, of Tacoma, Wash., and WILLIAM MORIN, of Nashua, N. H., who helped get Impco bleaching and red liquor washing equipment and Lindblad screens going; and RODGER SHERIDAN of Northwest Filter Co., proudly observing instruments in the big entirely automatic filter plant.



(L to r): RAY SMYTHE, Pacific Coast representative for Rice Barton; JACK WILCOX, Process Equipment Div. Mgr., Electric Steel Foundry Co., Portland, which supplied much pulp mill equipment; MEDER JOHNSON, of James Brinkley Co., Seattle, who designed new air dryer for pulp dryer, and supplied Nash and Midwest Fulton and other equipment.



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SEMCO

The instrument that put electronics to work

Before electronics came into the picture, industrial instrumentation was caught in a squeeze. On one hand, it was besieged with demands by production men and engineers for higher sensitivity, faster speeds, and greater reliability. And on the other hand, it was hampered by the limitations of mechanical devices. For the instruments of fourteen years ago were merely mechanical imitations of a man watching a galvanometer needle and twiddling dials. They were too delicate . . . too sensitive to vibration . . . too easily led astray by wear or maladjustment. They just couldn't deliver the performance that new production methods required.

In 1940, however, came a major milestone in the progress of instrumentation—development of the *ElectroniK* potentiometer. This was not only a new kind of instrument. It was a new concept of measurement. For the first time, it applied the science of electronics in a practical way to the design of a measuring device for industry. It replaced complicated, fragile mechanical gadgets with a simple but sensitive electronic circuit and servo system . . . the "Continuous Balance" principle of measurement.

You could tell it was something new when you opened up the *ElectroniK* instrument's case. There was no sign of whirring gears, levers and cams. You could tell it was giving a new kind of performance in measurement, too, by the way the pointer would move swiftly and surely in one smooth sweep whenever the measured variable changed.

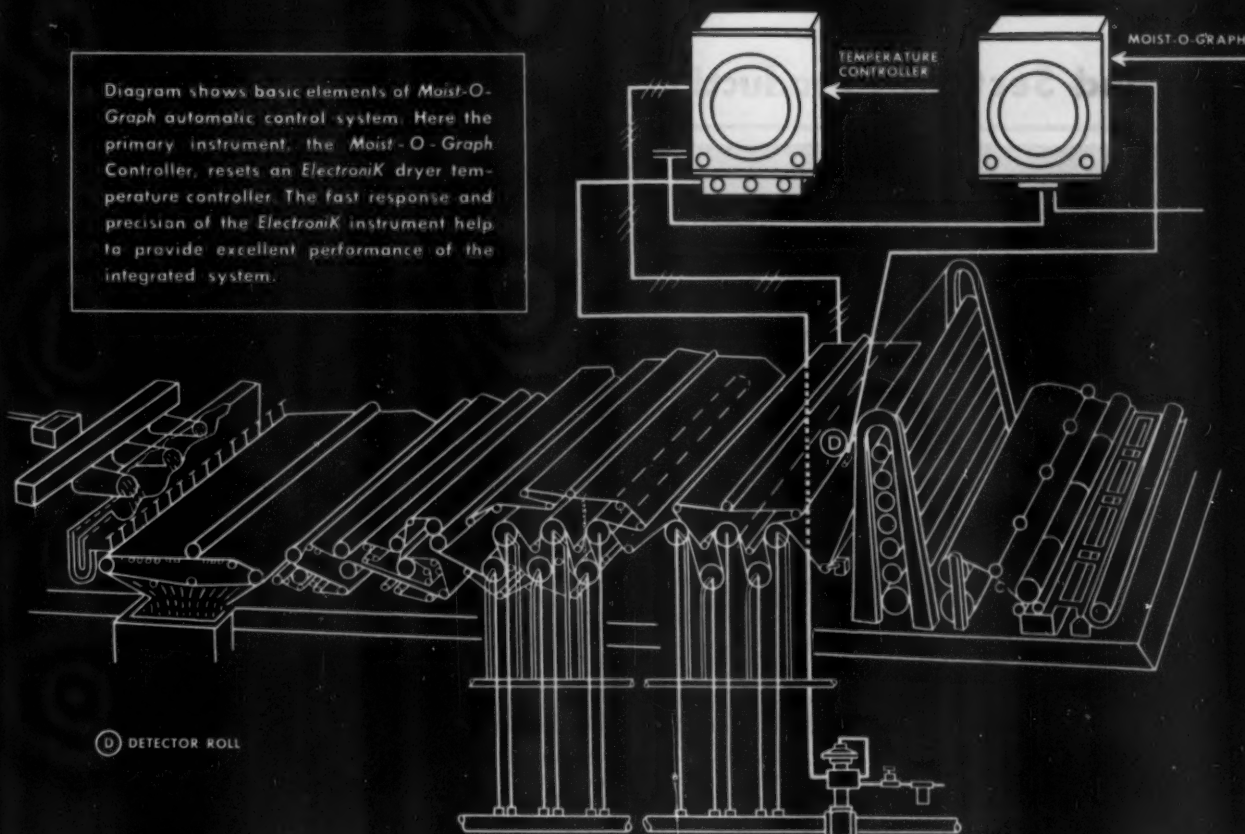
The *ElectroniK* instrument gained quick acceptance by production men, engineers, research technicians and maintenance men. They liked the way it provided laboratory accuracy and sensitivity, week after week, under the toughest industrial service conditions. They found that its speed and precision made possible improvements in product quality and process operation that had been unattainable before. And they have proved their confidence by ordering and re-ordering *ElectroniK* instruments by the thousands . . . not solely because it was *first* of its kind, but because it has continued to be the *best* in performance.

Now --- electronic *Moist-O-Graph* controls sheet



Moisture detector rolls are mounted across the width of the sheet on the last drying cylinder.

Diagram shows basic elements of Moist-O-Graph automatic control system. Here the primary instrument, the Moist-O-Graph Controller, resets an ElectroniK dryer temperature controller. The fast response and precision of the ElectroniK instrument help to provide excellent performance of the integrated system.



moisture content automatically

THE ELECTRONIC *Moist-O-Graph*, which has scored such notable processing improvements by recording sheet moisture content, can now function as an automatic controller. This latest development of Honeywell engineering gives paper makers an accurate, completely mechanized means of holding moisture content within closer limits than ever before possible.

The results of *Moist-O-Graph* control are far-reaching. Wrinkling and breaking of stored paper, due to uneven moisture content throughout the roll, are substantially eliminated . . . as are over-drying and resulting brittleness of paper. Steam consumption of the dryers is maintained at top economy. Operators are freed from the task of regulating moisture manually, either during steady production or when breaks occur.

The moisture control system is individually engineered for each installation. The primary controller

is the *Moist-O-Graph*, which measures moisture in terms of the sheet's electrical resistance as sensed by a detector roll. This instrument, through its pneumatic control system, resets the index of either a secondary pressure or temperature controller. Measurements are independent of the machine hood humidity, speed, and sheet basis weight. The *Moist-O-Graph* readings can be converted to per cent moisture by establishing a resistance-moisture calibration for the particular stock being processed.

Honeywell specialists, who are thoroughly experienced in the application of controls to paper-making processes, will engineer your individual moisture control system. Your nearby Honeywell sales engineer is well qualified to discuss your specific requirements . . . and he's as near as your phone.

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BROWN INSTRUMENTS

First in Controls

**ALASKA'S FIRST PULPWOOD LOGGING HEADQUARTERS—THIS IS HOLLIS**

Camp buildings at left were floated 42 miles from Ketchikan pulp mill site, where they had been used by construction workers. Wartime landing barge seen at extreme right was first

loggers' camp. Little but rotting, hidden logs of old houses remained of what had once been a gold miners' town of 400 population.

Logging in Alaska is Much Like Capturing a

Pulp & Paper goes mining for green gold in Alaska—A forest tour in hydroplane, pickup and boots

• Pulpwood logging in Alaska is going to have many things about it reminiscent of the marines establishing island beachheads in a war.

In an Aeronca Sedan hydroplane, a PULP & PAPER editor flew with Logging Mgr., Art Brooks, over the islands and peninsulas west and northwest of the mill where the wood is coming from. They landed in a tiny bay at Hollis Camp, first logging camp and headquarters of the new company.

As far as the eye could see, in more than an hour of flying both ways at 85 mph, mostly at 600 ft. altitude, there were—trees, trees, trees, nearly all virgin timber.

The endless green blankets of spruce and hemlock rose and fell on hills and minor mountains of all sizes and descriptions. In many cases hills rose 300 or 400 ft., almost perpendicularly, along the water's edge, and even higher inland. A snow frosting tops some of the higher ones even in the mild summertime. At 600 ft., the pilot had to dodge many of them.

Even when the loggers and their construction crews have "stormed" a beach successfully, a big job in itself, they face many other rough problems before they even start logging. A considerable amount of muskeg and rock is prevalent in these areas, creating additional problems in building the short road-systems necessary. But it is amazing how so many trees are found growing on only a thin layer of soil over these rocks, and much of it over-mature.

PULP & PAPER's editor toured the few short roads and skidways already built, and watched high-line logging where a yarder was pulling felled trees down a brush covered hillside. Over 300 ft. or more above the spar tree and yarder, a logger was clambering around the distant bank like a monkey hooking up the long line to felled trees. Logging in Alaska is a he-man's job.

Incidentally, the bears come big in these woods—seven of them were seen in just the single day's excursion by

this editor—and big seals frolicked in the water, and a logger who had a mind to could go a few feet out in a boat from his bunkhouse and pull in salmon up to 60 lbs., or halibut up to 150 lbs. or more.

EXTENT OF ALASKA TIMBER—

The U. S. Forest Service over a quarter a century ago estimated 78 billion bd. ft. of timber (equivalent to 130 million cords) in the entire Tongass National Forest. A later estimate is 85 billion ft. A new survey is now under way, which will include Prince of Wales Island, 130 miles long and up to 45 miles wide, where most Ketchikan Pulp wood is coming from.

Virtually all of Southeastern Alaska—the "Panhandle"—is within the National Forest and there is no privately owned timber here. This is actually only 5% of Alaska—a strip 300 mi. long, 100 mi. wide. The rest of Alaska—to north and west and a much vaster area—has about 350 billion bd. ft.,



WOODS AND WATER

This is Twelve Mile Arm which cuts through Prince of Wales Island near Ketchikan logging camp. It will probably be "water route" logged, using former wartime landing barges and skidding logs down banks directly into water.



TREE-TOPPING JUST LIKE "STATESIDE"

High Climber BILL NOAH starts 150 ft. climb with aid of rope and boot spikes. At finish he will saw off top—75 or 100 ft. perhaps—and Ketchikan loggers will have another spar tree for yarding operations.

Beachhead—But without the Shooting

but it is widely scattered timber, inaccessible or uneconomic for pulp. These so-called "Interior" forests are varied in species—spruce, birch, cottonwood, aspen and larch. But the dense Tongass forests are 74% hemlock, 20% spruce and only with small amounts of other species, as red cedar and Alaska cedar.

The warm Japanese current touches America on this Southeast Alaska coast, turning south to Washington and Oregon, and gives this part of Alaska a mild climate. Its intricate waterways are free of ice throughout winter. Annual precipitation varies from 85 to 160 inches, reducing forest fire risk and increasing forest growth.

The majority of trees in the Tongass forest are 18 to 36 in. in diameter and 100 to 150 ft. high. But we saw 6 ft. diameter spruce at Hollis. Average stand of an acre, says the USFS, is about 30,000 bd. ft. or about 50 cords. But there are extensive areas with twice this volume, and these are numerous. The trees on the average, the FS says, are smaller than those in Washington and Oregon, but the logs this editor observed going into the mill were much larger than a lot of

smaller stuff now being used farther south. The FS has figured a complete turnover and fully restored stand of timber in the Tongass forest on the basis of a crop rotation of 85 years.

Western hemlock is now a highly rated pulping species and the Sitka spruce of Alaska compares favorably with favored white spruce. Alaska has more of the high quality spruce than British Columbia, Washington or Oregon, and it is more accessible. The forests rarely extend more than 4 or 5 miles back from the intricate networks of deep water passages. Most timber is within 2½ mi. of navigable water. Full-tree lengths are towed to the mill at low costs, as rafts, bundles and cribs.

In flying over the area, these log tows were seen in various areas, suddenly appearing around a bend, gliding down a channel—all headed for Ward Cove, through protected channels. Clarence Strait, about ten miles across at its widest, is the most open water there is.

The wood picture for industry in the Far West has been changing faster than many industry leaders realize. The flight over Alaska's forests showed that today there is probably more timber close to potential new tide

water mill sites than anywhere else on the Pacific Coast.

Ketchikan Pulp has contracted with the USFS for 1½ billion cu. ft. of timber for a period of 50 years. This is spread over 364,000 acres. The price is now \$2 per 1,000 bd. ft. A major portion of this timber is on Prince of Wales Island, where the company and small independents are doing all the logging so far. Also Ketchikan Pulp contracted for future timber on Ketchikan's own big island, Revillagedido (called "Revilla" for short).

As this issue went to press a month's production was completed at Hollis Camp with possibly 3½ million ft. produced, over 30 million felled and bucked and three million cord decked ahead. About five miles of road were built.

At the mill, Ketchikan Pulp has a woods staff under Mr. Brooks that includes five professional foresters and five other trained staff personnel.

THE FLIGHT TO HOLLIS—On the flight to Hollis Camp, Mr. Brooks and his editor-guest soared about 15 miles up Tongass Narrows, passing the mill and Ward Cove on the right. Then across Clarence Strait and up Kasaan

Bay which cuts into Prince of Wales Island's east coast. Ten miles up this bay, another long neck of water, at 180° angle, cuts almost all the way across to the ocean side. This is 12 Mile Arm. There is enough wood, just in this narrow arm of water, in the adjoining Harris area and around Hollis, to keep the Hollis camp going for at least six years.

Hollis is at the head of Kassaan Bay, just where 12 Mile Arm comes in view. It is a 35 mile flight from Ketchikan (42 miles by water).

The plane swung sharply and banked downward to glide into the snug Hollis harbor. It was only a few hundred feet to a big gray World War II landing barge, located at the head of the little bay, with a log walkway connecting it with shore. The loggers lived on this converted barge. Later investigation showed many signs that it had seen heavy action in the South Pacific.

This landing barge, named "K.P. (Ketchikan Pulp) No. 10" was "the camp" when Hollis was visited by PULP & PAPER. On shore, a knoll (among hills) was being cleared for a permanent headquarters camp.

The lower part of the barge, once crowded with landing troops and their big guns, was converted into four main rooms. These are a galley, messroom, lavatories and a main entrance room, with a tool shop at one end, including a 16-in. lathe and other tools, and with lockers for the men near the doorway. Above this a second deck had been added, with 30 rooms for the crew and offices for the superintendent and timekeeper. On shore were a few cabins for married men.

NOW A BIG CAMP—By now, there is a new and bigger Hollis Camp, however. The cookhouse, mess house



WOODS MEN

WOODS OPERATIONS MGR. ART BROOKS (in middle) confers with his key men at Hollis, Alaska, logging headquarters. GEORGES BOUHEY (left) was in charge of camp construction. EARL SHIPLEY (right), is General Logging Supt.



SCENES IN ALASKA LOGGING

(Top, left) U. S. Marines and the big guns that they landed on South Pacific still seem to haunt this war-scarred landing barge—a converted Alaska logging "camp."
(Top, right) Snub-nosed, steelplated water dozer, powered by General Motors diesel, designed by Harold C. Hanson, Seattle, is used to form log booms.
(Bottom) One million ft. of pulpwood in this cold-deck, being surveyed by Wood Mgr. Brooks, in foreground. Note trees left for reseedling at top of steep hillside.

and 30 bunkhouses which were used by construction workers at the mill site, have been floated to Hollis and brought ashore. These are 8-man bunkhouses. But six or seven of them were converted to two-family houses. Other families were building their own homes.

The crew in K.P. 10 totalled only about 40 men. The permanent camp now has about 150. Also on the new camp site are superintendent's office, engineer's office and a guest house.

Removed from the living area, on another clearing is a concrete base-machine shop. Around this, pre-fab forms were used to construct a generator house, a saw shop, a blacksmith shop and other workshops. Big oil tanks fabricated by Hydraulic Supply of Seattle are here.

Below this is a newly built log dump, buttressed with heavy logs. An 80 ft. high, 50 ton stiff leg derrick crane bought from the Port of Seattle, picks up a whole truck load of 10,000 to 12,000 bd. ft. of bundled logs and

lifts them into the water.

Steel strapping, which has been used elsewhere in the strapping of bundled logs, will be used for flat bundles in the water for the 35 mile or longer tows to the mill. The tows generally will consist of 24 bundles to a raft, 4 bundles wide, six bundles long, totalling around 250,000 to 260,000 bd. ft.

A new type of steel water bulldozer is used to form the booms. Ruggedly built, it is just 16 ft. long, 8 ft. wide, with a one-man cabin. There are two at the camp and also two in use at the mill log pond. They are named K.P. 12 to K.P. 15, and each one is capable of moving bundles of 25 to 35 logs at a time.

All towing to mill is contracted out to independent tug operators.

The bulldozer is powered by a General Motors diesel turning a 24 by 28 in. wheel, eliminating danger of explosive fumes aboard. It is surrounded with ½ in. steel plating and its draft is 34 in. The Weldit Tank & Steel Co.,



A team of two American 375 Crawler Cranes loads up to 30 cars of pulpwood logs daily at a Georgia siding. One American 375 unloads a truck carrying 2¾ cords in two easy slingloads, while the other machine bumps the logs into place.

TEAMWORK LOADS 30 CARS DAILY

Since mechanizing with two American Cranes, production has been increased 3,000 per cent daily at one Georgia loading area which feeds the St. Regis Paper Company mill in Jacksonville, Florida. The swift-moving team of American cranes means big savings in time and money over hand-loading operation.

Some 125 cars of logs a week are shipped from this siding to the St. Regis mill, although 175 cars can be loaded and shipped weekly, according to Griffith and Dyal, wood contractors of Mayport, Florida, who own the two American 375's. The pulp logs are trucked to the loading area from 222,000 acres leased by St. Regis near Colon and

Fargo, Georgia, and are transferred to the rail cars by the American Crawlers.

The American 375 Crawler Cranes, like other world-famous American products, have cut costs and upped production in America's leading industries and on America's biggest and toughest jobs. It'll pay you to find out about the advantages offered by efficient American 375 Crawler Cranes. Write or call your nearest American Distributor for complete, detailed information TODAY!

American Hoist

American Hoist & Derrick Co.

St. Paul, Minn.

Bellingham, Wash., built the water dozers, as designed by Harold C. Hanson, Seattle naval architect.

Earl Shipley, general logging supt., and Georges Bouhey, in charge of camp construction, met the plane and took Mr. Brooks and PULP & PAPER's editor in a pick-up truck to see the logging.

On the way, they recalled the only resident at Hollis when the loggers arrived was an old prospector, owner of the once famed Lucky Nell mine, right behind the logging show. In Gold Rush days 60 years ago, Hollis was a gold miners' town, with a population of 400, much bigger than Ketchikan. A few rotting logs of old houses are seen in the brush—all that remains of the miners' town.

THE LOGGING SCENES—Most spectacular logging operation which PULP & PAPER saw on that trip was yarding off a steep hillside. An Allis

CIRCLED X on Prince of Wales Island is location of Hollis, Ketchikan Pulp Co.'s first logging headquarters. It is about 35 air miles from Ketchikan. The lighter shaded areas on this map indicate the pulotimber allotment which was sold by USFS to Ketchikan Pulp. Almost all the upper half of Prince of Wales Island and a smaller area on Revillagigedo Island, above the pulp mill site, constitute the area—364,000 acres.



ALASKA LOGGING "A LA ROLLER COASTER"

(Top) Allis Chalmers HD 20 diesel tractor with Carco arch and winch starts down rugged slope.

(Middle) Here's the load behind it, going thru squashy muskeg, and down a very steep bank.

(Bottom) Lorain 2 yd. shover digs gravel for roads out of stream-bed, let's nature wash it, and loads Euclid dump truck.

Chalmers HD 20 diesel tractor with a Carco winch and arch and blade and a Caterpillar D 8 with Cat blade and Hyster winch and Carco arch were snaking bunches of big logs from the yarding area down to the water. Their route resembled that of a roller coaster. But besides tipping up and down over steep banks, they dragged the logs through deep, oozing muskeg, too. A Washington Iron Works Yarder Model 207 with General Motors 6-110 diesel engine and Gearomatic transmission, was doing the yarding off the mountainside that rose steeply far above where the tractors got their loads.

On another road, a Lorain 2 yd. shovel was seen following right up the course of a climbing mountain stream while digging gravel out of the stream bed for road-building. Nature helped with the job, by washing the gravel right there in the stream, as the Lorain dipped its loads in the water and then into Euclid 10 yd. dump trucks. These hauled the gravel a short distance to where a logging road was being built by an Allis-Chalmers HD 20 diesel.

There were seven cold decks of logs, one with over 1,000,000 bd. ft., and all within a mile of the Hollis logging area by the time the mill started up. About 200 acres were already felled and bucked. It was a good start and by now logging is in full swing, with nearly four times the crew.

The timber here is averaging 800 to 900 bd. ft. to a tree, equal to a ton of unbleached pulp.

Some spruce logs seen on this trip were 8 to 10 ft. in diameter. A lot of the wood was 4 to 6 ft. in diameter and ranged down in size to poles.

Going full, the pulp mill will need

145,000,000 bd. ft. of logs per year.

Important in this logging operation will be General Electric 2-way FM short wave equipment with a master station at Hollis, and various units in the woods. With this equipment, the camp will have communication with the mill and with Ketchikan.

The camp has four Kenworth trucks and three Lorain cranes of 2 yd. and 1½ yd. type. Three Allis-Chalmers HD 20 tractors are used in logging and roadwork, and the Cat, previously mentioned, in logging.

A specially built Washington Iron Works slack-lime skidder also is provided. This one is designed to handle 2,800 ft. of 1½ in. skyline. The interlocked speeds have been especially engineered for all downhill logging.

There are three other Washington Iron Works Model 207 yarders.

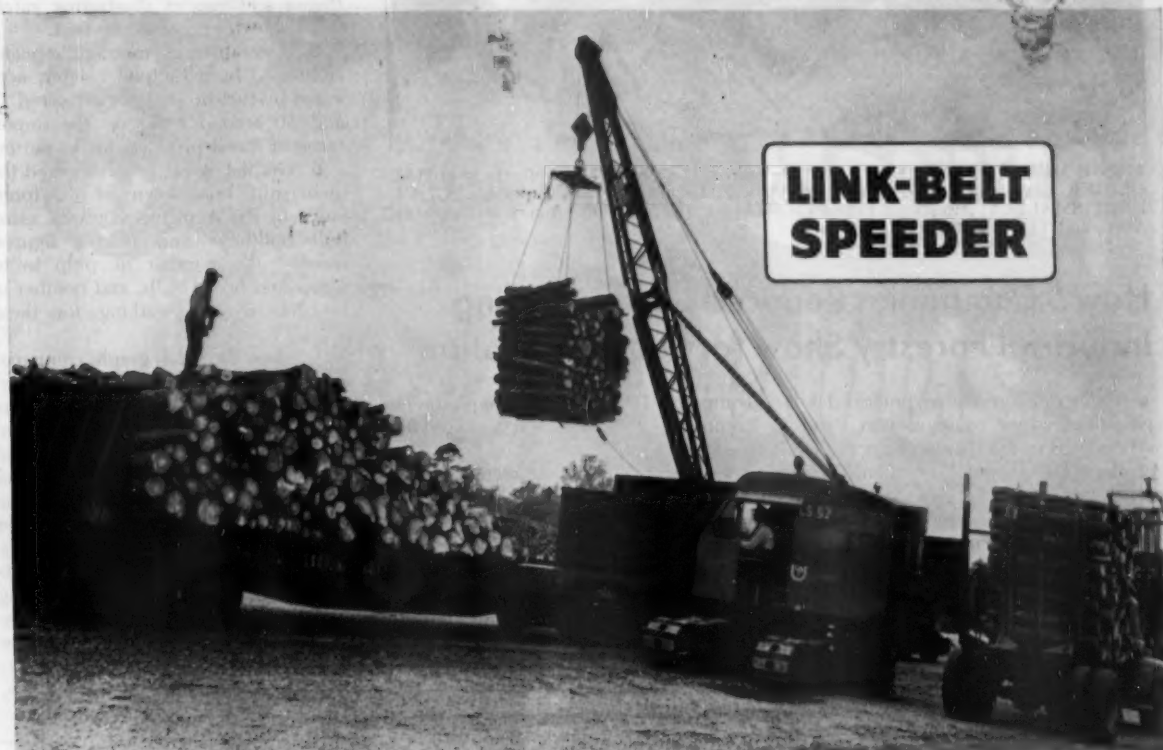
Another new addition is a triple-drum Carco yarder mounted on an Allis-Chalmers HD 19 tractor.

The longest road here in the next 6 years or so will probably be broken through for some 8 or 10 miles up Harris River. But 12 Mile Arm, on the other hand, will be logged by water route, using the landing barges for camps, and skidding logs off the hills right into the water.

On Sept. 3, a big slackline-skidder was moved into place at Neets Bay on Revilla Island, along with the K.P. 10. Here about 10 million bd. ft. have been felled and bucked and yarding and cold decking has started.

A special built Washington Iron Works Model 113 yarder with V-8 Chrysler Industrial engine is used on an A-frame float to rig up ahead for the skidder and then to take out small corners from the beach when not rigging up.

Mechanization--key to profit



This LS-52 averages only 20 minutes to load 18 cords on this rack car. Speed-o-Matic controls and independent swing and travel assure fast, accurate placement of loads even on far side of car.

Link-Belt Speeder shovel-cranes increase output, conserve labor, reduce your costs!

LEADING pulpwood handlers throughout the U. S. and Canada find that a Link-Belt Speeder with Speed-o-Matic controls is their best answer to moving bigger cordages at lower costs. These fast, extremely easy-to-handle rigs frequently demonstrate efficiency which is almost unbelievable. In fact, several companies report that their Link-Belt Speeders have paid for themselves in one year—in reduced demurrage charges alone!

Prime factor behind the Link-Belt Speeder's superiority for pulpwood handling is its Speed-o-Matic power hydraulic control system. Speed-o-Matic provides true, feel-of-the-load, finger-tip-touch control . . . assure fast, safe and accurate load handling with a sling, grapple or pusher blade.

For complete details on Link-Belt Speeders, how they're improving pulpwood handling methods—see your distributor. Or write for free 16-page illustrated booklet, "How to cut costs, speed pulpwood handling at the mill—in woodlands."



When LS-52 has all cars loaded, slings are removed and replaced with a concrete bumper. Due to accuracy with which far side load has been placed, only near side has to be bumped. In slack periods, fully convertible LS-52 can be rigged as shovel or hoe to build access roads, dig drainage ditches, etc.

LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

LINK-BELT SPEEDER



THESE MEN WORKED HARD to make success of pulpwood exhibit. (L to r) HAL GEIGER, Glatfelter Pulp Wood Co., JEAN FISHER, Hammermill Paper Co., CLARENCE SMALLEY, Armstrong Forest Co., HARRY JEFFERSON, American Pulpwood Assn., and TIM BARR, W. Va. P&P Co.

How 5 Companies Reduced Costs in Giving Industrial Forestry Show for Public Education

● Industrial forestry as practiced by pulp and paper companies in Pennsylvania, was the theme of an exhibit at the Coudersport Woodmen's Carnival at Cherry Springs State Park, Pa., Aug. 6-7. Jointly sponsored by the Armstrong Forest Co., D. M. Bare Paper Co., Glatfelter Pulp Wood Co., Hammermill Paper Co., and the West Virginia Pulp & Paper Co., in cooperation with the American Pulpwood Assn., the exhibit featured a word and picture story of tree farming and forest protection.

This cooperative endeavor enabled the participants to produce a more effective display at very low cost (about \$40. per company), which

compared favorably with equipment companies' displays worth over \$1 million.

Outstanding features were:

1. A "crowd catcher". This was a pulpwood guessing contest consisting of a pulpwood stick enclosed within a chicken wire fence with contestants asked to guess species, length and weight. 490 entrants were submitted for the prize of \$25.

2. Story continuity. 58 photographs with explanatory captions gave a smooth, running story of what the companies were doing in industrial forestry.

3. Three-Dimension. Two dioramas showed examples of good and bad

forestry practices and a scenic view of a tree farm.

4. Animation. Safety clothing and posters were integrated into the theme and movies illustrating safety were shown in a separate tent.

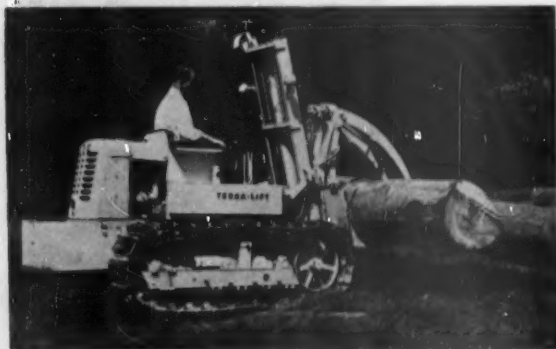
5. Animation. A message repeater controlled by a footpad enciter, activated by feet of viewers, delivered 15 and 30 second tapes on the importance of forest products to the nation.

6. Graphs. A pie graph showed the ownership breakdown of all forest lands in Pa. A pictorial graph, using mill buildings and human figures, showed the number of pulp mills, paper and board mills, and number of foresters in Pa. working for these mills.

Another pictorial graph compared dollar value of pulpwood consumed annually in Pa., and the dollar value of all wood products produced annually in Pa. A graph showed the total capital investment of all pulp and paper mills in Pa. and also showed the total annual value of paper and paper products sold from these mills.

Members of the executive committee were Clarence Smalley, Armstrong Forest Co., Vance Meyers, D. M. Bare Paper Co., Harold Geiger, Glatfelter Pulp Wood Co., Jean Fisher, Hammermill Paper Co., Tim Barr, West Va. P&P Co., and Harry Jefferson, APA.

NEW WASTE WOOD CHIPPER



PRACTICAL DEMONSTRATION of Terra-Lift is shown as it picks up log weighing about two tons.

A waste wood chipper especially designed for sawmills who wish to make chips economically is offered in three disc sizes: 36", 42" and 48". Under normal operation these chippers can produce up to 15, 18 and 22 cords per hour respectively with low horsepower.

Tests made on southern pine slabs indicate that the chips produced by these machines may not need screening. The economy factor from this point alone is considerable. Most sawmills can pick enough clean wood off their waste conveyor to make a chipper installation well worth while, even without barking.

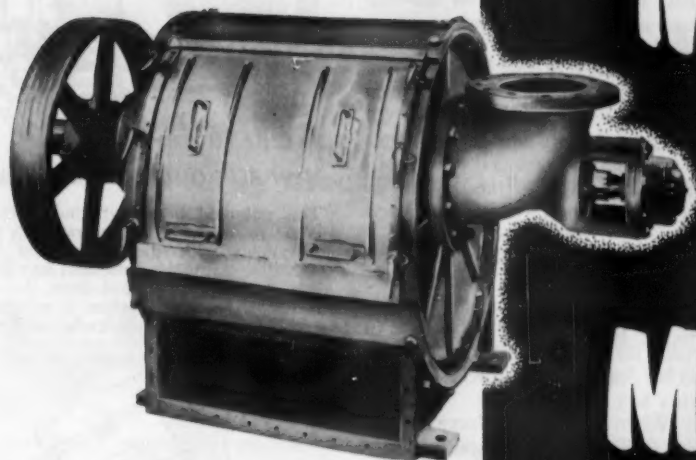
These chippers are ruggedly constructed and are designed especially for easy installation and low maintenance. These chippers are produced by the Hansel Engineering Company, 1500 Westlake Avenue North, Seattle 9, Washington. Inquiries in the South may be made to Owen-Richards Company, 1009 2nd Avenue North, Birmingham 4, Alabama.

Comparative tests made with the Hansel chipper and other chippers on Southern pine slabs indicate that the Hansel chipper makes a superior paper with greater strength. As a result of these tests several of these chippers are being ordered by a large kraft mill in the South.

(ADVERTISEMENT)

SETTING-UP attention-getting display for McCulloch Chain Saws at Coudersport Woodmen's Carnival are G. GLENN GILLINGHAM, Gil-Con Tool Co., ALLEN REINERS, McCulloch representative for NY-NJ; and BURL HANSEN, Eastern Representative for McCulloch.





The "Junior" Screen . . . smallest of *three* units producing from 35 to 150 tons per day, respectively.

Money Saving Midgets

Cowan Centrifugal Pulp Screens by **APPLETON MACHINE COMPANY**

Added efficiency, greater economy are the watchwords for *Appleton Machine Company's* junior versions of the standard Mark "A" Cowan Centrifugal Pulp Screen, acknowledged as outstanding in its field.

The Mark "E" Screen is a half-sized model of the standard Mark "A", conservatively rated at a capacity of 2400 U.S.G.P.M. accepted stock. 50 h.p. is required to operate the Mark "E", but its drive is designed to accommodate a 60 h.p. motor, wherever needed. The Mark "E" is particularly advantageous in smaller mills, or as a supplementary screening unit. Also, installing two Mark "E" Screens—instead of a single larger machine—provides a definite safety factor in case of breakdown.

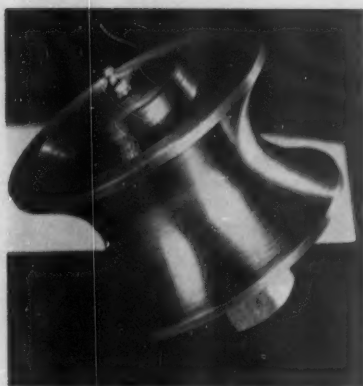
The "Junior" Screen is a quarter-sized model of the big Mark "A", with a rated capacity of 1400 U.S.G.P.M. accepted stock. 25 h.p. operates the "Junior" Screen, but it will handle motors up to 40 h.p. Greatest applications are as secondary screening units, and

as a primary screen for mills producing a variety of pulp grades which require a system made up of small, separate units.

Performance of these two Cowan Screens is comparable in every way to that of the standard Mark "A" Screen . . . the same high consistency screening . . . low percent rejects . . . good fiber separation . . . low shower dilution pressure . . . top hydraulic efficiency. Typically sound *Appleton Machine* construction plus a protective coating tailored to fit your needs *complete* your assurance of long-time satisfaction.



CUSTOM-BUILDERS OF PULP & PAPER MILL MACHINES
WINDERS • FINISHING ROLLS • REWINDERS



This is the Guidler, which serves as idler as well as guide and presents a long smooth yielding surface to the belt edge instead of a single striking point.

How New Guides Reduce Belt Wear

Something new in belt guides is the Guidler®, which is said to reduce belt wear to a minimum. Now in use in over 27 Scandinavian mills, Guidlers are the brain child of Norwegian inventor Dankert Krohm Holm.

First Guidler installation in America is on the No. 9 Pusey & Jones Four-drummer machine at the Nekoosa, Wis., kraft mill of Nekoosa-Edwards Paper

©Copyright Knapp Mills, Inc.

Co. The new Black-Clawson machine at Filer City, Mich., also has them.

Excessive belt wear has long been a cause of concern on cone-type pulleys and in particular on differential speed drives on paper machines. Belt destruction results from the continuous contact of the belt traveling at high speeds against the cast iron or steel guide.

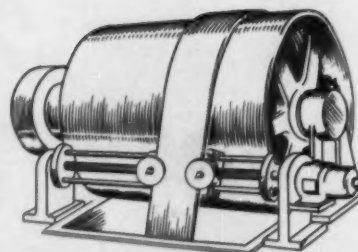
Dr. Holm, a technical consultant in Oslo, Norway, studied this problem and an analysis of the design disclosed three points which he believed had to be corrected. They were:

1. The contact surface between belt edge and guide is a place where severe friction takes place.

2. The belt oscillates and heaves in normal service against a stationary steel or cast iron surface, causing further belt destruction.

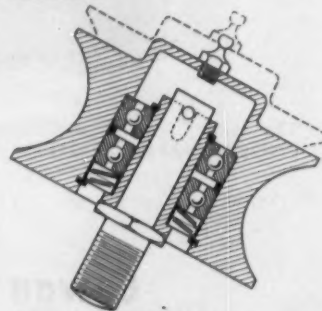
3. When necessary to increase belt speed, shifting by steel guide exerts severe pressure on the belt edge.

Dr. Holm reasoned that a practical solution would have to eliminate these objections without impairing the function, or guiding and control of the belt. He developed a patented tilted hyperbolic profile guide, capable of revolving and incorporating an axial movement. Such a design preserves the essential long direct line contact



NEW BELT GUIDE—THE GUIDLER

This patented tilted hyperbolic profiled guide revolves and incorporates an axial movement with the fast-moving belt. This design preserves essential long direct line contact surface, but since this surface now revolves, friction is minimized and slippage between belt edge and guide is eliminated.



This is new principle adapted for guides on cone-belt pulleys which promises to reduce belt wear to a minimum. Hyperbolic principle plus oscillation of guide with belt eliminates friction.

surface, but since this surface now revolves, friction is minimized and slippage between belt edge and guide is eliminated. Normal oscillation of the belt continues and the guide is designed to oscillate with it.

A belt equipped with these guides can also be shifted as required without undue pressure on the belt edges, because the long line of contact distributes this pressure efficiently, while the guide revolves. To assure this long direct-line contact area, it is important to always tilt the hyperbolic guide at an angle of 30 degrees to the plane of the belt edge, in the direction of travel.

According to William Smith of Knapp Mills, Inc., Long Island City, N.Y., who have the world-wide license for the manufacture and sales of these devices, use of Guidlers is not confined to cone pulley belts for papermaking machinery, but has a wide and diversified application for all types of belt-driven conveyors.

Dow Cuts Price

A reduction of 2 cents per lb. of solids in the tank car price of most Dow latexes has been announced by Donald L. Gibb, manager of the plastics sales department, The Dow Chemical Co.

Here's why Blaw-Knox Pulpwood Grapples are preferred by the most experienced pulp and paper companies



OUTSTANDING PERFORMANCE and dependability resulting from many years of Blaw-Knox design experience are only two of the many reasons why the leading pulp and paper companies continue to place repeat orders for Blaw-Knox Pulpwood Grapples.

Blaw-Knox Company is the foremost expert in designing Grapples for the economical handling of symmetrically stacked pulpwood.

Experienced Blaw-Knox engineers will gladly discuss your pulpwood handling problems and recommend the correct size Grapple for your needs without obligation.

Ask for Bulletin 2397.

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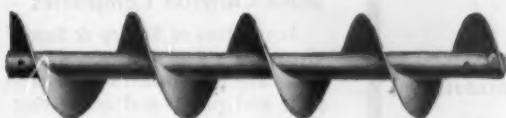
BLAW-KNOX GRAPPLES

FOR PULPWOOD AND LOGS

Make sure the screw conveyors you buy pass this quality test!

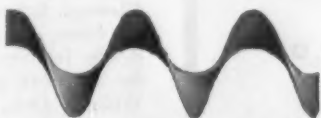
If they don't . . . investigate LINK-BELT's sound engineering and quality manufacture . . . your assurance of top performance

1. Is flighting accurately formed?



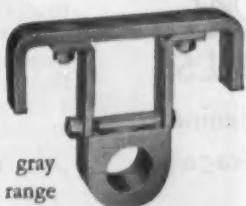
Link-Belt's specialized machinery assures accurate forming, producing uniformity of flighting curvature.

2. Are diameters uniform?



Only specially selected steels are used to meet Link-Belt's rigid specifications.

3. Will the hangers match your exact needs?



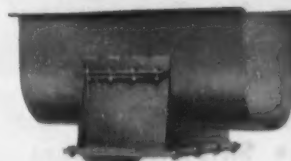
Hangers are available in gray iron or steel frames in a range of styles and with various bearing materials.

4. Will installation be easy?



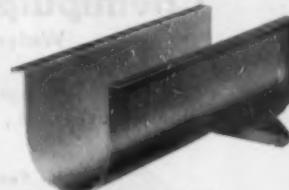
Straightness is checked before shipping, and extra care is taken in handling and loading. Jig-drilled coupling bolt holes facilitate assembly.

5. Can gates be installed on the job?



Gates are available for bolting or welding in place right on the job for ease of trough opening location.

6. Are troughs fabricated to your specifications?



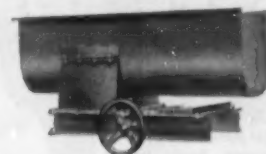
Link-Belt's accurate fabrication assures better fit of all components. Choice of metals to fit your need.

7. Is the drive fully integrated?



Only Link-Belt builds a complete line of gear and chain drives, couplings, bearings, shafting.

8. How wide a choice of spouts and gates do you have?



Discharge spouts and gates can be fixed or detachable. Hand or rack-and-pinion, flat or curved slide gates.

9. Is full ordering information readily available?

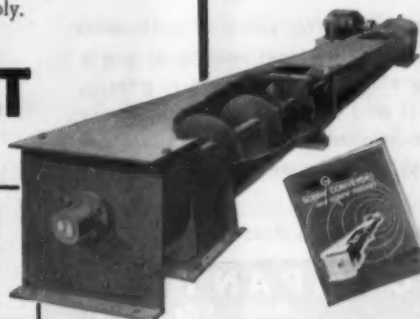
Link-Belt's 92-page Screw Conveyor Book 2289 contains complete ordering data. Ask your Link-Belt representative or distributor for your copy today.

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SCREW CONVEYORS

13,629

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



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Chemipulp's high degree of chemical, mechanical and physical control over materials and operations results in maximum plant output, high pulp quality, and low operating costs.

- Circulating Systems
- Chip Distributor
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- Stripping Towers
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- Hydroheater
- Spray-Type SO₂ Gas Cooling System
- Acid System (Bubble Absorption)

Chemipulp Process Inc.

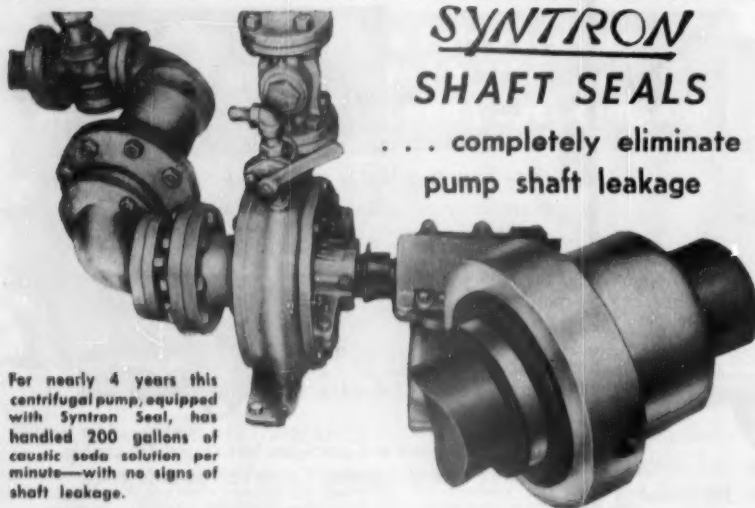
Watertown, N. Y.

Associated with

Chemipulp Process Ltd., Crescent Bldg., Montreal, P. Q.

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For nearly 4 years this centrifugal pump, equipped with Syntron Seal, has handled 200 gallons of caustic soda solution per minute—with no signs of shaft leakage.

SYNTRON SHAFT SEALS

... completely eliminate
pump shaft leakage

Requiring almost no maintenance even after years of continuous service, Syntron Seals assure positive, low cost sealing of gases and liquids around the rotating shafts of compressors, pumps, turbines, etc. Available in models and sizes for practically every industrial installation, these mechanical, anti-friction seals are self-lubricating—eliminate repacking expense—are easy to install.

Write today for complete catalogue data—Free

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CLIFF R. CRAWFORD, Pres., Black-Clawson—
"Now we can make almost every conceivable type of machine."

Significance of Merger Of Bagley & Sewall Into Black-Clawson Companies

Acquisition of Bagley & Sewall Co. gives The Black-Clawson Co., internationally-established manufacturer of pulp and paper and converting machinery, a fifth major division and potentially a much wider products scope.

Bagley & Sewall, founded in 1880, is just 7 years "younger" than Black-Clawson. It has made over 300 paper machines, developing many new Fourdrinier features. Its 304 in. Fourdrinier at Great Lakes Paper Co., Fort William, Ont., is still the widest in America. It recently set a size record in the South with a 262 in. Fourdrinier kraft board machine for Continental Can Co., Hopewell, Va.

The Hamilton, O., firm has its Black-Clawson, Shartles Bros., Diltz and B-C International (England) manufacturing units. Now, with the big Bagley & Sewall operations in a dozen buildings and other structures at Watertown, N. Y., it acquires facilities widely known for making Fourdrinier machines of all sizes, up to the biggest in the industry. This will also expand its converting equipment lines, which Black-Clawson has extended considerably in recent years.

B & S employs 400 and their work




W. A. WHITE JR. (left), new Vice Pres. of Black-Clawson and Gen. Mgr. of Bagley & Sewall Division. With B-C since 1938, he helped install and start new B-C machine in Sweden recently. DON H. MONTVILLE (right), new sales Mgr. of Shartle Bros. Division of B-C at Middletown, O. He joined Shartle in 1920. He succeeds JOHN A. HAMM, now Development Engineer for new lines.



Always Floating

LODDING K-4 Blade Holder gives additional blade flexibility . . . free riding, it hugs the roll from end to end . . . a marked advance in the floating blade principle . . . K series holders and blades interchangeable . . . no sacrifice of ruggedness . . . no blade changing problems. Lodding Engineering Corporation, Worcester, Massachusetts. Represented by W. E. Greene Corporation, Woolworth Building, New York

DEPENDABLE PERFORMANCE



DECO

INDUSTRIAL AIR SYSTEMS

MILL Ventilation
AT ITS BEST
FOR MEN and MACHINES

DREW ENGINEERING CO.

809 N.E. LOMBARD STREET
 PORTLAND 11, OREGON
 TELEPHONE, UKIAH 3681

will continue under direction of William A. White, Jr., a B-C vice president and new general manager of the Watertown division.

Abe Cooper, retiring B & S president, and Cliff Crawford, president of B-C, expressed agreement that Black-Clawson was "a logical company" to maintain the Bagley & Sewall specialties and that these would further advantageously diversify the Black-Clawson lines.

A. H. Lundberg Inc. Represents Hydraulic

A. H. Lundberg, Inc., Seattle, will represent Hydraulic Supply Mfg. Co., of that city, in connection with evaporators, blow steam condensers, heat exchangers, and process equipment for this industry, according to Frederick J. Hoffman, president of Hydraulic.

Mr. Lundberg has been a consulting engineer for process equipment in chemical pulping many years. He formerly represented the process division of General American. The late J. P. Rubush formerly represented Hydraulic.

For West Coast Mills, Hydraulic, a 49-year-old firm, now offers advantages of local manufacturing and also design and engineering through the Lundberg firm, Mr. Hoffman pointed out.

McNally Goes to Pittsburgh

William R. McNally, special nationwide representative in pulp and paper for Link-Belt Co., has transferred from Chicago to its (5020 Centre Ave.), Pittsburgh office to be district sales engineer. He will divide time between pulp and paper and the steel industry.

J. B. JONES,
Chairman, Technical Section, CPPA



Our Mistake

We publish herewith the correct picture of Mr. J. B. Jones, Manager of Mfg., Ontario Paper Co. Ltd., Thorold, Ontario, as it should have appeared on page 14 of the 1954 World Review Number of PULP & PAPER.

Mr. Jones was correctly identified at that time as Chairman of Technical Section of CPPA, but unfortunately the wrong picture was published.

**"Milk in your paper just won't do,
Let *Ti-Pure* whiten it for you!"**



*Mill owner Samson was all in a stew,
Dark, dingy paper was making him blue.
His pulp was, at best, a sad dreary lot,
Till TI-PURE of DU PONT arrived on the spot —*

*"Throw out that milk, Sam, don't be a back-seater!
It's good-by to dark paper, with me in your beater.
Like all Du Pont pigments, I've been put to the test,
As a filler for paper, I'm considered the best!"*

*Now Sam uses TI-PURE—he's oft heard to say,
"My paper's the whitest in many a day."*

MORAL:

*Why you should use TI-PURE is quite plain to see:
It gives whiteness . . . and brightness . . . and opacity!*

Du Pont now offers a direct-to-you field service on TI-PURE titanium dioxide pigments. Technical experts, backed by a modern paper laboratory, will be glad to help you with your pigmenting problems. Call our nearest office for details.

**PROMPT, NATION-WIDE SERVICE THROUGH THESE
DU PONT DISTRICT OFFICES* AND WAREHOUSES:**

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Ti-Pure
TITANIUM DIOXIDE

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. DU PONT DE NEMOURS & CO. (INC.), PIGMENTS DEPARTMENT, WILMINGTON 98, DELAWARE

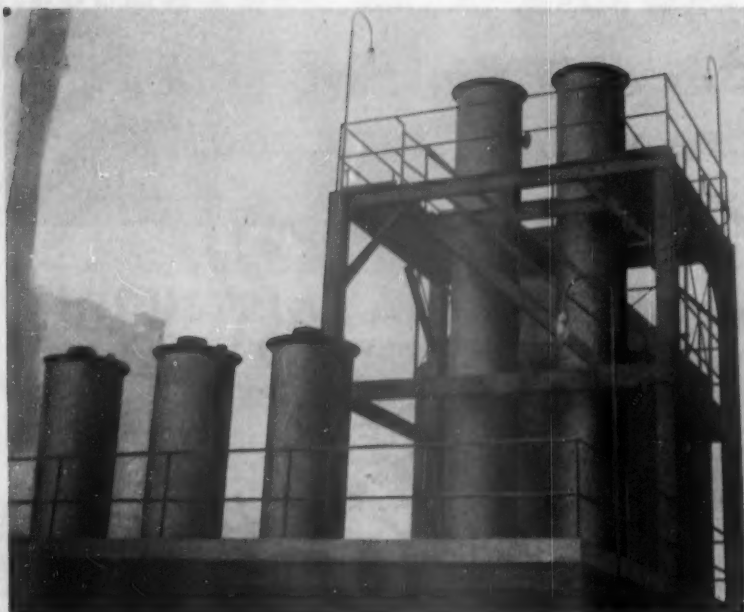
TI-PURE gives your paper:

WHITENESS. Lasting whiteness in food wraps and containers, waxed board, glassine, and parchment.

BRIGHTNESS. Permits sharp reproduction of printed matter in porous papers, such as magazine and book stock.

OPACITY. No "show-through" in lightweight papers, envelope and stationery stock.





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Shown here is one of the many units throughout the country using VITROPLAST. The Reactor and Absorber towers are installed at P. H. Glatfelter Co., Spring Grove, Pa.

Let us tell you more about this specific application of VITROPLAST, in your Chlorine Dioxide plant. We will be pleased to show you how it has economically helped solve the corrosion problems of other manufacturers in the Paper Industry. Write for Bulletin 5-30E.

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cements . . . coatings . . .
vessel linings . . . plastic
structures.

**ATLAS
MINERAL
PRODUCTS CO.**
MERTZTOWN, PENNSYLVANIA

Patton Mfg. Co. To Make Paper Mill Machinery

Clark E. Patton, president of Patton Mfg. Co., Inc., Springfield, O., has announced addition of a Paper Mill division to their special precision machinery plant to develop equipment for the paper industry.

Geo. S. Herbert, its general manager, was former assistant general manager of Midwest-Fulton Machine Co., now merged with J. O. Ross, and Wayne Crannell, sales manager of the new Patton division, was former Midwest-Fulton chief draftsman.

O'Donoghue Takes Business Partners

Roderick O'Donoghue, who recently reported on "mill architects" for PULP & PAPER (June, 1954) has taken Arthur C. Bird and Paul B. Corning as partners in his business.

Mr. Bird joined Mr. O'Donoghue five years ago, after 30 years with Hardy S. Ferguson, consulting engineer. Mr. Corning has spent 28 years in the industry as consulting and plant engineer before joining Mr. O'Donoghue in 1953.

Westergaard Firm

Johannes Westergaard, formerly vice president of Castle & Overton, Inc., has established his own business, J. Westergaard & Co., Inc., dealing in woodpulp and paper mill supplies. He is president of the Assn. of American Wood Pulp Importers, a position he also held in 1939-1941. His new offices are in the Americas Building, Rockefeller Center, New York.



IN NEW POSTS FOR EQUIPMENT AND SERVICES

A. HUNTLEY JOHNSON (left) has been appointed Southern Sales Representative to cover Bolton and Emerson products for John W. Bolton & Sons, Inc., Lawrence, Mass.

OLIVER C. TATE (right) has been named Executive Assistant Chief Engineer to John B. Kohler, 71 Woodstock St., Crystal Lake, Ill. The firm offers special machine design and service to paper and converting industries. Mr. Tate, graduate of Illinois Institute of Technology, was in special machine design with Goodyear Rubber.



how?

When you have an idea or question concerning Corn's application to your product or manufacturing process, contact the CORN PRODUCTS DEPARTMENT of ANHEUSER-BUSCH, INC.

Our entire Corn Products Research Section, composed of skilled specialists and the latest laboratory equipment will readily go to work on your particular problem and at no obligation to you.

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Does the job faster... at lower cost!

Here's how... Check into the exclusive features of the Wellman-Browning Locomotive Crane and you'll see how it gives you:

Greater switching power. Drawbar pull is unsurpassed due to exclusive Torqflo hydraulic drive.

Smoother performance of hoist, swing, boom hoist and travel motions because of Torqflo and Metered Air Controls. Finger-tip control varies speed and power... eliminates jerks

and shocks. Result:

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● You can't beat a Wellman-Browning Locomotive Crane for output, versatility and long life! For details, write Wellman-Browning Locomotive Crane Division, The Wellman Engineering Company, 7076 Central Ave., Cleveland 4, Ohio.



WELLMAN- BROWNING

LOCOMOTIVE CRANES



NEW HOME FOR MORDEN

E. BURKE MORDEN, Pres., has announced the removal of Morden Machines Co., Portland, Ore., to its own building at 3420 S.W. Macadam Ave. The new structure, pictured above, has facilities for all the firm's administrative, engineering, service and sales staffs and for laboratory space so arranged that tests can be conducted by its Slush-Maker pulper on pulps and brokes sent in by interested mills.

Rookie Star from Paper Town

Michigan papermakers point with pride to big league rookie star, Ron Jackson, who went right to the Chicago White Sox from Western Michigan College, Kalamazoo, and hit two "crooshul" homers in his first 6 times at bat, and has been keeping up the good work. The 20 year old, 6 ft. 7 first baseman is son of a Sutherland Paper Co. welder and is married to Carol Platefaber, of the Rocky River Paper Co. family.



NEW FACES AT LOCKPORT FELT. (Left) RUSSELL T. GREY joins field technical service staff; (right) THOMAS R. FOLTZ on engineering and research staff.

Additions to Lockport Staff

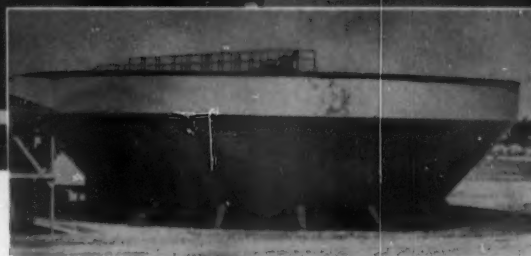
New member of Lockport Felt Co's expanding field technical service staff is Russell T. Grey, 1954 Chairman of New York-Canadian Div. of the American Pulp and Paper Mill Supts. Assn. Mr. Grey's long experience in paper-making includes 14 years with Gotham Paper Mills, where he was general manager and superintendent.

Another new face at Lockport is Thomas R. Foltz, who has joined the engineering and research staff. A professional chemical engineer, Mr. Foltz' varied background includes industrial experience with Philadelphia Quartz and Gulf Refining.

Another Accelerator® Installation

Proves Again

that highest quality
can be obtained at
lowest installed cost!



PROCESS WATER of highest quality (low color, iron and alkalinity) was the requirement of this paper mill... regardless of changes in raw water. In addition, space and installed cost were important considerations.

On all of these counts — uniform effluent quality, installed cost, and space savings — the Accelerator secured the job, just as it has on many other installations. (Accelerators are treating more than one billion gallons per day!)

Space and installation economies are illustrated in the photographs above. Note how the Accelerator tank is shaped for simple support on concrete pad and buttresses. This meant savings in installation costs. Space savings are evident when you consider that this *single tank* combines mixing, coagulation and clarification and can treat 10 million gallons per day!

For more information on how the Accelerator can work for you, secure your copy of the 28-page Accelerator Bulletin.



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informative
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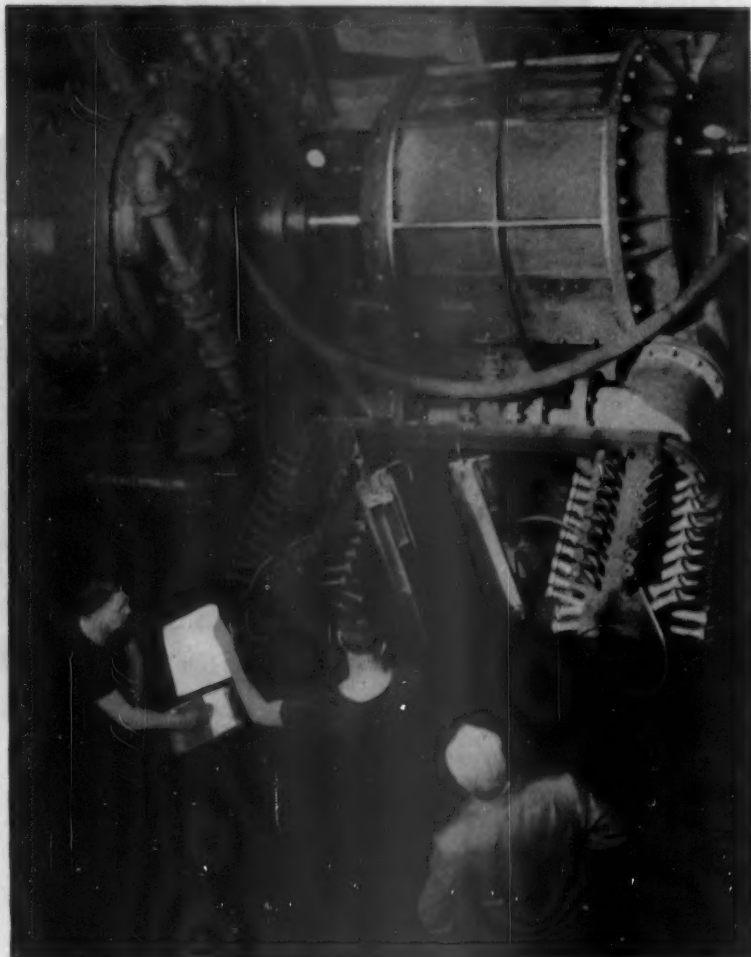
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Rated performance of every Nash Vacuum Pump is assured by this precise laboratory test



Rated capacities of Nash Vacuum Pumps are not theoretical. Every Nash Pump is tested individually. Air capacity is determined by delivery thru accurately machined and calibrated orifices. Related vacuum is measured by precise mercury column, and horse power is recorded electro-dynamically. Records of these tests are retained by us, and certified copies are available to Nash Pump owners.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

440 WILSON ROAD, SO. NORWALK, CONN.

Safety Chairman

August R. Sauer, safety director of Continental Paper Co., Ridgefield Park, N. J., has been elected chairman of the first safety committee of Region 1, National Paperboard Assn.

Co-Chairmen of Southern Meeting

Clyde G. Jones of Olin's Ecusta Paper Division, chairman of Southeastern Supts., and Russell T. Hudson, of Union Bag & Paper Corp., chairman of Southern Supts., are the co-chairmen of the Oct. 13-15 joint meeting in the Geo. Vanderbilt hotel in Asheville, N. C.

Ask Reif Re McCarthy

A lot of folks in this industry are from Appleton and can say about Sen. Joe McCarthy—"I knew him when—"

But Myles Reif, vice pres. and mgr., Blandin Paper Co., went through Marquette University with the world's most famous Comm-chaser.

GENERAL ELECTRIC CO. has a bulletin, designated GED-1966A, "Electric Equipment For Process Industries." Their General Purpose Component Motor Dept. also announces a new line of fractional-horsepower gear-motors, smaller and lighter than previous designs. G-E also has a new line of d-c magnet brakes featuring reduced maintenance easy single-point adjustment and long life.

ROSS MIDWEST-FULTON CORP. has announced a new oscillator, the Hydro-oscillator, which is said to assure smooth, tight rolls of paper, by imparting oscillations to the rewinder.

JOHNS-MANVILLE has a folder, "Chempac Packings & Gaskets" about Chempac materials which are said to be virtually unaffected by corrosive chemicals and active solvents. Address requests to 22 E 40 St., N. Y. 16.

TUBULAR PRODUCTS DIV., BABCOCK & WILCOX CO. offers a folder, "Helpful Hints on Hand Threading Stainless Steel Pipe and Tubing." Ask for TDC 147 from their office at Beaver Falls, Pa.

DILTS MACHINE WORKS DIV., THE BLACK-CLAWSON CO. has bulletin 17-DM on their "Pacemaker Two Drum Winder and Pacemaker Automatic Collapsible Register Reel," designed to handle webs ranging from tissues up to 60 lb. paper. Write to them at Fulton, N. Y.

HANCHETT MFG. CO. has issued a new, complete catalog on knif, shear blade and circular type knife grinders. Write to their main plant, 906 N. State St., Big Rapids, Mich., or West Coast plant, 5727 S.W. Macadam Ave., Portland 1, Ore.

TECHNICAL SERVICE DIRECTOR

Excellent opportunity for Technical Service Director in a large progressive pulp and paper mill located in the Middle Atlantic States.

Prefer Ph.D. or M.S. in Chemistry or Chemical Engineering. Candidates must be at least 35 years of age, possess administrative potentialities and have industrial experience in the field of pulp, paper, coatings, quality control and other related problems.

Will be expected to assume full responsibility for the management of the Technical Services Division and conduct programs in Product Improvement and Development, Process and Equipment studies and train young technical graduates in phases of pulp preparation and paper making.

Remuneration will be commensurate with qualifications. Liberal company benefits. Replies held in strictest confidence.

Box 194, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

WANTED: Chemical Engineer or Chemist, 25 to 35, pulp and paper process experience preferable but not required, to work on technical staff of semi-chemical pulp and paper mill in Midwest. All replies confidential. Box 178-A, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

INDUSTRIAL ENGINEER

College graduate, experienced in planning and scheduling production process, cost reduction, statistical reporting and process improvement for an expanding pulp and paper mill located in the Middle Atlantic States. Age to 30. Good salary and opportunity for advancement. Send complete resume. All replies confidential. Box 176-A, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

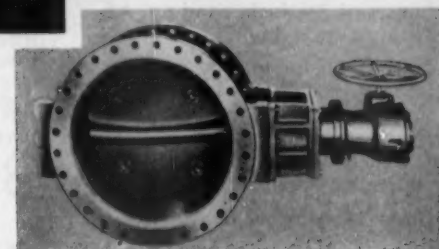
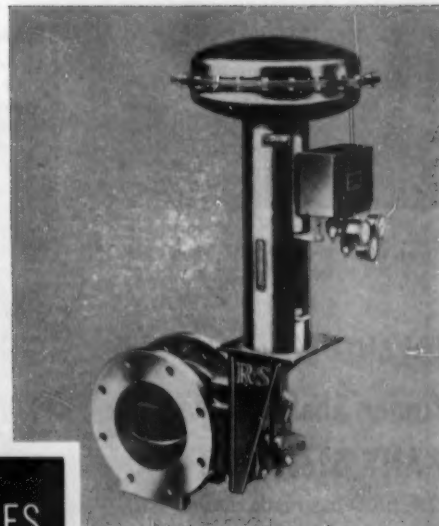
WANTED

BEATER ENGINEER. Mill in Midwest making high grade rag content papers has vacancy for Beater Engineer who is also a good colorman. An excellent opportunity for the capable man. Apply in first instance to Box 189, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

SANITARY ENGINEER

Opportunity available for Sanitary Engineer in an expanding pulp and paper mill located in the Middle Atlantic States. Age 25-35 years. Experience in paper mill wastes, stream pollution and water purification or similar experience. Good salary and advancement. Send resume of educational background and industrial experience. All replies confidential. Box 175-A, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

R-S BUTTERFLY VALVES



R-S VALVES ASSURE ACCURACY, SPEED AND ECONOMY

Automatic or manual—whichever you choose—the S. Morgan Smith R-S Valve line meets these three challenges to valve performance.

UNIFORM CONTROL IN ALL POSITIONS . . .

R-S Valves give consistent control of flow through all positions in its normal regulating range. The disc simulates a straight line, semi-log quality.

REGULATION AND CLOSURE ARE QUICK . . .

R-S manual valves are actuated by a lever, chain lever, handwheel or chain handwheel. Power actuation can be provided if desired.

MINIMUM PRESSURE DROP SAVES POWER . . .

The bevelled disc of the R-S Valve seats solidly with a metal-to-metal seat. Accurate machining and a 9° to 12½° angle of closing insure minimum clearance for minimum leakage. Drip-tight or bubble-tight closure can be obtained with the positive action of a rubber seat valve.

Over 75 years experience in hydraulic design and engineering stands behind valves. For further information about butterfly, cone or ball valves for use in the process fields, see your instrument maker or write to S. Morgan Smith Company, York, Pennsylvania.

HYDRAULIC
TURBINES
PUMPS

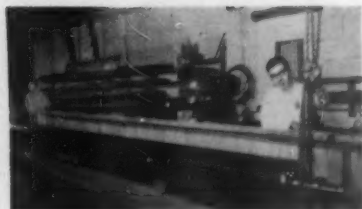
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VALVES

FREE DISCHARGE
VALVES
CONTROLLABLE-
PITCH SHIP
PROPELLERS

S. MORGAN SMITH CO.



This 12", five-leaf collapsible shaft was built for a 17' 6" drumface Beloit winder in an eastern paper mill.

TIDLAND Pneumatic Winder Shafts Come in ANY SIZE . . .

TIDLAND has made shafts from 20 inches to 200 inches long, and in diameters of 2½ inches and up. All shafts are custom-built.

Tidland Shafts quickly pay for themselves, *sometimes in a matter of weeks*, because they eliminate costly dismantling troubles and shaft deflections and increase winder operating speeds.

Tidland Shafts come in two types: (1) the *leaf-type* collapsible shaft for rewind, and (2) the *lug-type* for mill rolls. Both are made of high grade seamless tubing of wall thicknesses to meet your requirements. Both are inflated by specially-compounded heavy duty rubber inner tubes.

Avoid Core Damage



The tight grip of steel lugs along the entire length of the core prevents the shaft from deflecting. This ends damage to cores and paper and permits higher maintained operating speeds.

Tidland Shafts need no chucks, sledge hammers or set screw wrenches. The lug shaft is graduated in inches to speed up setting rolls of different lengths.

Tidland Shafts have withstood nearly five years of rugged tests under every operating condition. No Tidland Shaft has ever been rejected for workmanship or performance, nor, to our knowledge, has a Tidland Shaft ever been replaced by another type.

Write for folder and specification sheet.

TIDLAND SHAFTS

Manufactured by Tidland Machine Co.
CAMAS, WASHINGTON

Chemist Or Chemical Engineer

Opportunity available for Chemist or Chemical Engineer in an expanding pulp and paper mill located in the Middle Atlantic States. Age 25-35 years with several years experience in pulp and paper chemicals and fibers. Good salary with excellent opportunity for advancement. Send resume of educational background and industrial experience. All replies confidential. Box 174-A, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

WANTED

ASSISTANT PAPER SUPERINTENDENT for medium size New England mill. Not over 45. Excellent opportunity for advancement. High speed machines. Technical education desirable but not a requirement. All replies confidential. Salary open. Reply Box 179-A, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

YOUNG GENTLEMAN. British. At present sole representative in Hongkong of British paper exporters, desires emigrate to Canada. Available first half 1955. Twelve years experience paper trade export and local consumption. Reply Box 184, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

FOR SALE—FRICTION CALENDER

Top Steel Roll: 41" Calender surface, 49½" face bored for heating and cooling.

Centre Roll: 41" Cotton calender surface, 49½" face. We have two spare cotton rolls; one is new.

Bottom Roll: 41" face, tapered ends to 50".

Box 185, PULP & PAPER,
370 Lexington Ave., New York 17, N. Y.

WANTED

MACHINE TENDER. Experienced Machine Tender required for fine paper mill making rag content papers. Only men capable of taking full charge of machine and its operation should apply to Box 188, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

PULP MILL

SUPERINTENDENT

Wanted for 600 ton Kraft Pulp Mill in paperboard plant. Must be competent and experienced. Salary open. This position is with a large company and is a real opportunity for a capable person.

Box 193, PULP & PAPER
370 Lexington Ave., New York 17, N.Y.

Designed to Trim your Trimming Costs!



SMITH & WINCHESTER
MODEL E
UNDERCUT TRIMMER
with Side Loading Table

Designed to Cut Trimming Costs

The S & W Model E Undercut Trimmer meets the needs of the modern finishing department for high production, accuracy and safe operation. For years the Standard Undercut Trimmer and the Model E have been giving outstanding service in the leading plants of the country.

Now, we offer the Model E with side loading table and air for floating pile, for fast, straight line operation, ease of handling stock and increased efficiency. The Model E is built in 56", 66", 76" and 86" widths.

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The SMITH & WINCHESTER Manufacturing Company
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**MEN WANTED—
POSITIONS OPEN**

Managers, superintendents, asst. supts., foremen, chemists, machine tenders, back tenders.
Master mechanics, plant engineers, designers and draftsmen, industrial engineers.
Salesmen, tour bosses and others for permanent positions in paper and pulp mills and paper converting plants.
If you are available for a position in paper or pulp mfg. or paper converting, **SEND US YOUR RESUME.** It will be in confidence. No charge unless you accept employment through our Service.

**CHARLES P. RAYMOND
SERVICE, Inc.**

Phone: LLiberty 2-6547
294 Washington St., Boston 8, Mass.

FOR SALE: ROLL GRINDING MACHINE, "Churchill" Model "F", 28" x 216" Traversing Table Type, complete with self-contained motor drive including variable speed wheelhead motor, cambering mechanism, roll journal rests and other additional equipment. Brand new, immediate delivery. For full details and price apply W. A. Sparrow & Co., Ltd. 4/7, Chiswell Street, London, E. C. 1, England.

WANTED

SUPERINTENDENT. An excellent opportunity for a keen, energetic man to join the staff of fine paper mill currently making rag content papers for commercial, Government and technical purposes. Successful applicant will act as Assistant Superintendent for a period and when ability proven, promotion will follow. Remuneration commensurate with experience. Applications, which will be treated in strictest confidence, should be addressed to Box 186, PULP & PAPER, 370 Lexington Ave., New York, New York.

MASTER MECHANIC with 30 years experience in Newsprint, Pulp Mills and Tissue Mills. Also have worked for large paper machine manufacturer as paper machine erector. Have installed large modern paper machines. Available to go anywhere. Box 191, PULP & PAPER, 370 Lexington Ave., New York 17, N.Y.

SUPERINTENDENT for Multiwall Paper Bag Plant located in California. Full charge all manufacturing operations. Send full details of education, age, background and industrial experience in first reply. Communications will be kept strictly confidential. Reply to Box 190, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

WANTED

AIR DRIER OPERATOR with experience on Clark Aiken Air Drier. Only men capable of taking full charge of machine and its operation should apply to Box 187, PULP & PAPER, 370 Lexington Ave., New York, New York.

EVERY FAMILY OF FIVE in the United States uses an average of one ton of paper per year.

PULP & PAPER — October 1954



You are **LOOKING** at
the business end of a

WARREN Stock Circulating Propeller Type Pump

such as has been specifically engineered to meet the requirements of various leading mills. While many mills have the same basic problem of circulation and quick mixing, either in new or existing chests, yet the cycle of operation and operating conditions usually differs.

Warren engineers are well qualified, through training and many years experience in the Paper Mill field, to logically evaluate your circulation and mixing problems and suggest ways and means of accomplishing desired results. This applies to all chemical stocks, groundwood, half stock in rag mills, or dirty filler stock in board mills. It may involve horizontal rectangular, vertical cylindrical, or any other type of chests.

Whether it is a question of chest circulation, mixing, or any other pumping service in a pulp or paper mill, it will pay you to consult Warren.

Send for Stock Pump Bulletins



WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.

Warren, Massachusetts

The New York Times Comments

• **THE NEW YORK TIMES** commented recently on the **WORLD REVIEW NUMBER (1954)** of **PULP & PAPER**. That issue contains 134 pages, with sections on 44 countries, with 75 photographs from all corners of the world and a total of 196 statistical tables.

In mentioning some of the salient features of that issue, the business editor of *The Times* said:

"In terms of paper resources and per capita use of paper, the Free World has a big advantage over the Communist bloc."

The Times article continued:


"This is the theme on which the Chicago trade publication **PULP & PAPER** has built a world review number. Using official data and what are described as authoritative estimates, the magazine has arrived at the conclusion that the average person in the Free World uses 67 pounds of paper a year, against 7½ pounds per person in the Iron Curtain countries.

"Production of paper in the Free World last year was estimated at 48,581,312 tons, while that for the Com-

munist bloc was listed at 3,705,000 tons. Actually, no completely reliable statistics are available on paper production in the Communist countries, but there is little doubt that it is far lower than that of the rest of the world."

(If you have not received your copy of the **WORLD REVIEW NUMBER**, you may do so by simply sending in a \$3 year's subscription order plus \$1 for the 1954 **WORLD REVIEW**. The 1955 **WORLD REVIEW NUMBER** will automatically be included in your subscription order. Send your order to **PULP & PAPER**, Circulation Dept., 121 Second St., San Francisco 5, Calif., or any of the **PULP & PAPER** offices listed on page 3).

IT'S WOOD HUNGRY! WORK HUNGRY!



THE NEW
MODEL 145

DIAMOND

WOOD HOG

Made in 5 models — from
6 to 36 tons per hour

**Unbeatable for processing bark,
refuse, pulp bolt rejects**

The amazing Model 145 **DIAMOND** Wood Hog takes materials of all sizes and processes them as fast as they're fed into the spout. Double "anvil" feature provides a second cutting knife which promotes smooth operation... makes possible up to 40% finer reduction... reduces cutting strain and lessens power requirements.

The "145" has many other features, too, which result in savings and satisfaction for the user. Write us for complete information—now.

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MANHATTAN RUBBER COVERED ROLLS
longer, trouble-free service



more use per dollar

Manhattan Rubber Covered Rolls assure better production and last longer... won't harden, crack or corrugate... maintain proper density... permanently.

Manhattan produces an inseparable bond of rubber to metal... You reduce loss due to downtime... and get "More Use Per Dollar" under all conditions.

Discuss your requirements with the R/M roll covering specialist...

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Sutherland High Yield Kraft System*

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* U.S. Patent No. 2,591,106

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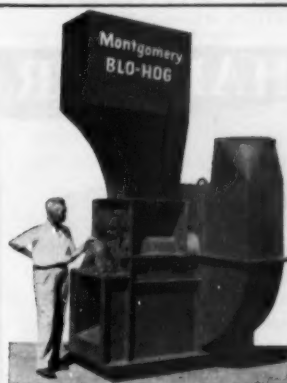
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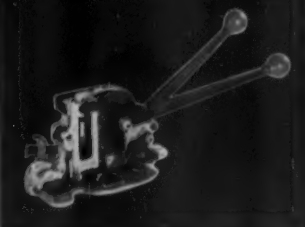
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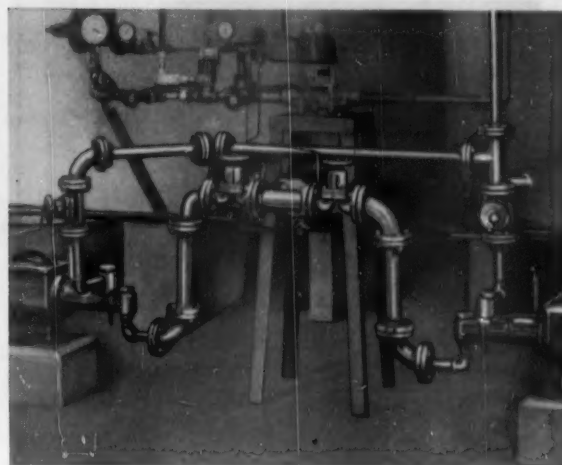
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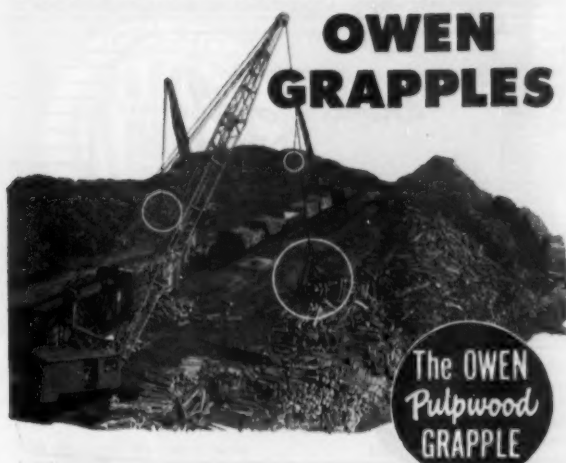


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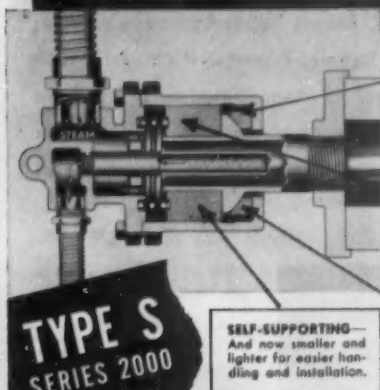
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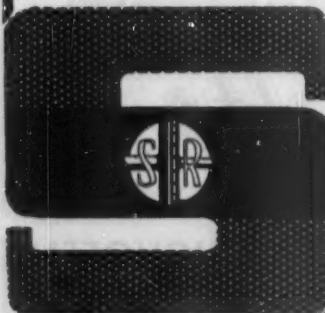
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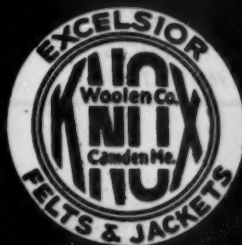
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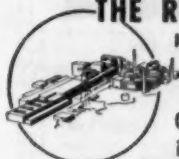
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